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IN THE

Supreme Court of the United States

OCTOBER TERM, 1949.

No. 2.

GRAVER TANK & MFG. CO., INC., THE LINCOLN ELECTRIC COMPANY, GRAVER TANK & MFG. CORPORATION,

Petitioners,

vs.

THE LINDE AIR PRODUCTS COMPANY,

Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE SEVENTH CIRCUIT.

RESPONDENT'S BRIEF ON REHEARING.

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September 30, 1949.

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ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE SEVENTH CIRCUIT.

RESPONDENT'S BRIEF ON REHEARING

Opinions Below.

The opinion of the District Court, Judge Luther M. Swygert (R. 907), is reported in 75 U. S. P. Q. 231.

The opinion of the Court of Appeals for the Seventh Circuit, Judges Sparks, Major, and Minton (R. 990) is reported in 167 F. 2d 531.

Jurisdiction.

Jurisdiction is invoked by petitioners under Section 240(a) of the Judicial Code, as amended by the Act of February 13, 1925, 28 U. S. C. §347(a).

STATEMENT OF THE CASE.

This is an action for infringement of U. S. Patent No. 2,043,960, issued in 1936 on the application of Jones, Kennedy, and Rotermund. The patent relates to electric welding.

The Decision of This Court.

This Court, by unanimous decision rendered February 28, 1949, and reported in 336 U. S. 271, affirmed the decision of the Trial Court in all respects. This Court held:

(1) that claims 18, 20, 22, and 23 of the Jones *et al.* patent are valid, and infringed (affirming the concurrent findings of both lower courts), and

(2) that the remaining claims in issue are invalid (reinstating the decision of the Trial Court and reversing, in that respect, that of the Court of Appeals for the Seventh Circuit).

Scope of Reargument.

Petitioners acquiesced in this Court's decision as to the validity of claims 18, 20, 22, and 23 of the Jones *et al.* patent. They petitioned for a rehearing solely with respect to the judgment of infringement.

On May 16, 1949 this Court entered the following order:

> "The petition for rehearing is granted, limited to the question of infringement of Claims 18, 20, 22 and 23 of the Jones et al. patent. The Court desires argument as to the applicability of the doctrine of equivalents to the findings of fact in this case"* (337 U. S. 910).

---

* Emphasis ours throughout, unless otherwise specifically indicated.

The doctrine of equivalents is the principle that:

> "No substitution of an equivalent for any ingredient of a combination covered by any claim of a patent can avert a charge of infringement of that claim, [citations] whether or not the equivalent is mentioned in the patent" [3 Walker On Patents (Deller's ed. 1937) § 464 at p. 1700)].

The welding composition covered by these four claims is specially prepared in an electric furnace for use in the automatic welding process invented by Jones *et al.* (R. 264). It never existed prior to this invention, and it has no other known use in industry.

The Linde Company makes and sells the preferred composition of the patent under the trade name "Unionmelt Grade 20" (Finding No. 9, R. 925).

The Lincoln Electric Company makes and sells the infringing combination under the trade name "Lincolnweld 660" (Finding No. 19, R. 926).

Except for one of the ingredients, these two compositions are actually identical. Both compositions—

use silica as the acid constituent of the metallic silicate (Pltf's Ex. 194, off. R. 333, rep. R. 896);

contain alumina within the limits taught in the patent (R. 280; Finding No. 21, R. 926);

contain a small added amount of calcium fluoride, a halide salt (R. 280; Finding No. 21, R. 926);

are compounded in such proportions that all of the silica present will combine with the basic ingredients to form metasilicates (R. 295);

are substantially anhydrous (R. 291);

are substantially free from substances capable of evolving a detrimental quantity of gas under welding conditions (R. 291);

are characterized by a vitreous fracture (R. 291-2); and

are finely-divided, unbonded fusible compositions (R. 344-5).

The single respect in which the two are not identical is that in the Lincolnweld 660 flux, manganese is substituted for a large proportion of the alkaline earth metals as the "basic" constituent of the metallic silicate ("basic" means alkaline, the opposite of "acidic"). The four claims held valid and infringed specify alkaline earth metals, but do not specify manganese.

So the question presented on this reargument is:

> Can the petitioners escape the holding of infringement by substituting manganese for a large proportion of the alkaline earth metals specified in these four claims?

This is not a new question. It was squarely faced and passed upon by the Trial Court and the Court of Appeals.

The Trial Court posed this issue in its opinion:

> "Since the accused flux is composed principally of manganese silicate, it does not literally infringe composition claims 18, 20, 22 and 23. Whether it actually infringes these claims depends upon what application is made of the doctrine of equivalents" (R. 919-20).

The evidence bearing on this issue and the findings made by the Trial Court are set forth below.

The Court of Appeals decided the point when it summarized and confirmed the Trial Court's findings which included this:

> "• • • their accused composition • • • in welding operation is in all respects equivalent to the compositions of the patent; • • •" (R. 1003).

This Court in its opinion last February, held that it "cannot undertake to review concurrent findings of fact by two courts below in the absence of a very obvious and exceptional showing of error" (336 U. S. 271, 275).

The opinion of this Court approvingly summarizes the holding of the lower courts:

> "• • • that the Lincoln Electric Co. made, and the other petitioners used and sold, a flux substantially identical with that set forth in the valid composition claims of the patent in suit and which could be made by a person skilled in the art merely by following its teachings. The petitioners introduced no evidence to show that their accused flux was derived either from the prior art, by independent experiment or from any source other than the teachings of the patent in suit" (336 U. S. 271, 276).

Petitioners, in their earlier briefs and arguments, have said everything they say in their present brief, and this Court and the lower courts have rejected it.

Petitioners seek to bring in many matters not germane to this rehearing. Their specification of errors (p. 25 of their brief) is to the effect that the Court of Appeals erred in various respects. Throughout their brief petitioners seek to point out many respects in which the lower courts erred, and have repeated once more nearly all the arguments as to validity which three courts and thirteen judges have now unanimously rejected.

They have even inserted a "Foreword" which purports to give the "essential materials for the decision of this case," but which contains no reference to the findings as to equivalency or even to the doctrine itself. Instead, their "Foreword" seeks to give the impression that this case is syllogistic in its simplicity, and that if this Court would but recognize some simple rule of law it would readily recognize

its error and reverse the unanimous decision reached last February.

On this rehearing, it would seem more appropriate that petitioners confine themselves to the question—

> Did this Court err in its decision last February which approved the Trial Court's application of the doctrine of equivalents to the findings of fact in this case and thus upheld the judgment of infringement?

Limits of This Brief.

We shall follow this Court's direction and limit ourselves in this brief to "the applicability of the doctrine of equivalents to the findings of fact." As to other matters, we respectfully request that the members of the Court, if they should so desire, refer to our "Brief for Respondent" filed December 24, 1948.

Under the heading below, "The Findings of Fact," we shall review the findings of fact most directly involved in the reargument.

Under Points I and II of our argument, we shall discuss the applicability of the doctrine of equivalents.

Under Point III we shall answer Point II of Petitioners' Opening Brief Upon Rehearing, wherein they argue that the doctrine of equivalents "has no place in patent law" and "should be expressly repudiated"—although we do not believe this is within the scope of the order for rehearing.

Under Point IV we shall answer Points I and III of petitioners' brief which have little or no bearing on the applicability of the doctrine of equivalents.

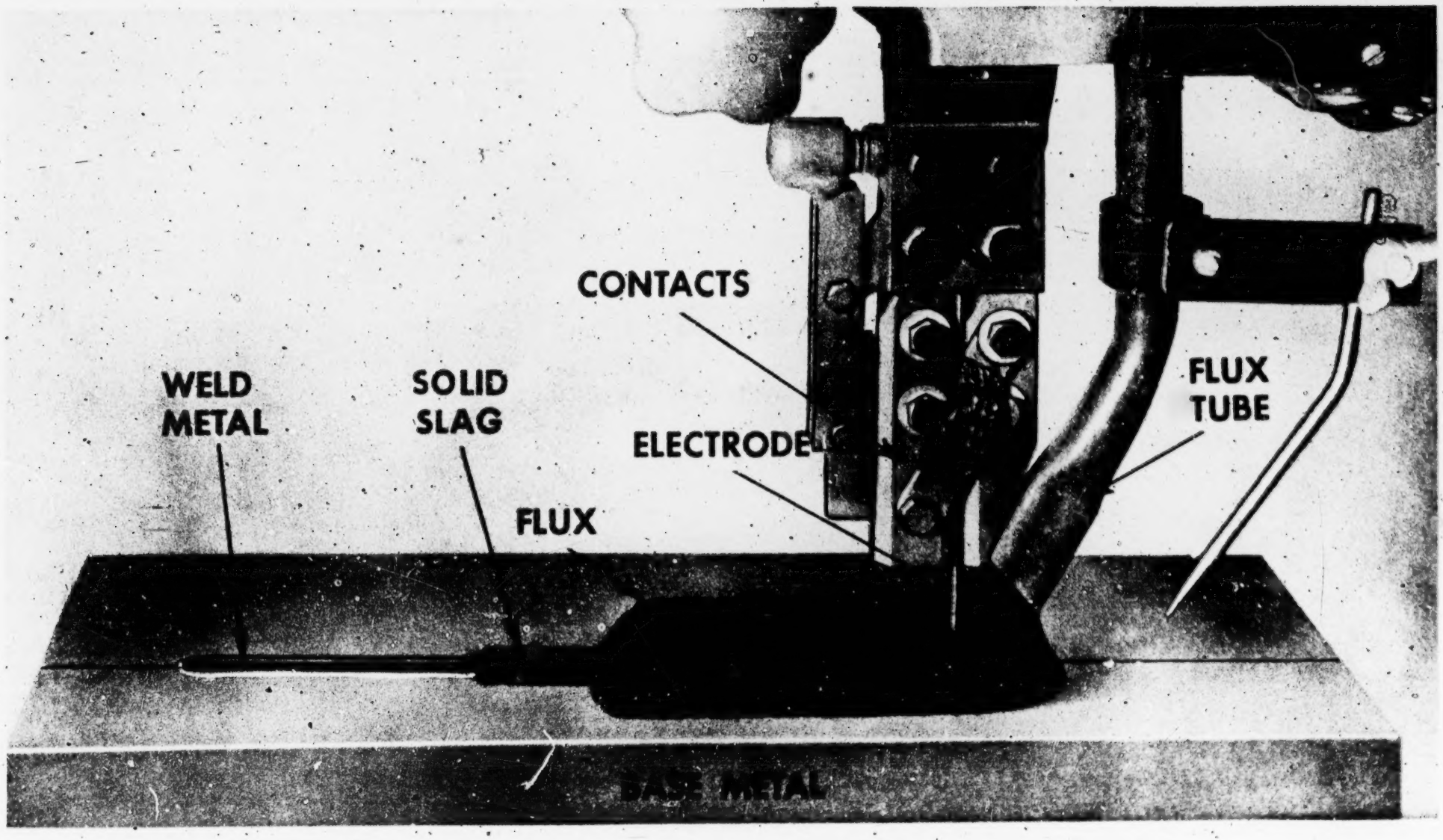


Fig. 1. Illustration from page 1 of Lincolnweld catalog.
(Plff's Ex. 203, off. R. 369)

The Welding Composition.

Judge Swygert stated in his opinion:

> "It is evident that the welding composition discovered by the inventors is the heart of the invention. The specification, except for references to prior art and objectives, deals with the properties of and the method of preparing a new welding composition" (R. 915).

This welding composition, sometimes called a "flux", is a specially prepared granular material and its only known use is in the practice of the Jones *et al.* sealed-arc method of welding.

In such use, the granular composition is heaped up along the seam to be welded. A welding rod or electrode is thrust into the heap. There is an illustration inserted opposite this page, taken from page 1 of the Lincolnweld catalog (Pltf's Ex. 203, off. R. 369).

A sub-surface pool of the material is fused to start the process, and the rod is moved along the seam while being maintained in contact with the pool of progressively fused welding composition (Jones *et al.* patent, p. 3, col. 1, line 34 *et seq.*, R. 957). In the words of the Trial Court:

> "* * * the welding rod somewhere above its very end is in contact with, or rather is surrounded by, the pool of fused flux and * * * the arc zone * * * is sealed in by a sheath of molten flux in the form of a cap above the base metal and in part of this pool there is entwined fused molten metal" (R. 911).

The Trial Court further said:

> "The distinctive characteristics of this arc zone, viz.: the dominant element making up the vaporous

> ionized area and the protective surrounding sheath of molten substance, can be attributed only to the peculiar properties of the welding composition which is employed. * * * They discovered what they sought —compositions * * * which permit the welding of far thicker plates in a single pass and at a speed many times faster than attained by any prior known method, and which completely eliminate the splatter and blinding glare of the so-called open arc" (R. 911-12).

The Teachings of the Patent.

The main constituent (or major salt) of the composition is a metallic silicate. It is formed from two constituents; one is silica, an acidic oxide, and the other a basic metallic oxide.

The patent specifically identifies nine metals which can be used as the basic constituent to form the silicate:

> "We have used calcium silicate and silicates of sodium, barium, iron, manganese, cobalt, magnesium, nickel and aluminum, both in binary and ternary combinations, in various proportions" (p. 2, col. 1, lines 62-65; R. 956).

Calcium, manganese, and magnesium are underscored in the preceding quotation since the preference of the inventors (R. 917) and of respondent (R. 919; Finding No. 9, R. 925) was primarily for calcium and magnesium, whereas petitioners have preferred calcium and manganese (Finding No. 21, R. 926). Kennedy testified:

> "* * * calcium and magnesium are available all over the world, so our preference was naturally for the cheapest flux" (R. 126).

To the metallic silicate is added a minor proportion of a halide salt, such as calcium fluoride.

Large portions of the patent specifications are given over to the discussion of the composition, and detailed directions are given as to its constituents, and its physical and chemical characteristics and properties, and its mode of preparation (p. 2 *et seq.*, R. 956; see also R. 255-6).

The patent states that:

> "The physical condition of the welding composition is likewise of the utmost importance" (p. 3, col. 1, lines 21-2, R. 957).

It gives explicit directions for manufacture so that

> "substantially all of the solidified welding composition is characterized by a vitreous fracture" (p. 3, col. 1, lines 32-3, R. 957).

Petitioners, in selecting the "Excerpts from Specification Describing Welding Flux of Patent in Suit" appearing at page 75 of their brief, have emasculated the specifications and have omitted many important portions. One important omission is the statement of the mandatory requirements, the five "musts" wherein the inventors summarized their detailed directions in the following unequivocal language (p. 2, col. 1, line 38 *et seq.*, R. 956):

> "A large number of experimental welds which we have made support the conclusion that the properties of a successful welding composition for this method of welding are these:
>
> "(1) The chemical reactions between the components of the welding composition must be completed before it is used in welding. Failure in this regard most surely invites porosity.
>
> "(2) It must be capable of controlling the penetration and the width of the weld.

"(3) Its fluidity at welding temperatures must be such that it will not become entrained with the molten metal.

"(4) It must consist of chemicals which are not detrimental to the properties of the steel, and

"(5) It must be readily removable from the finished weld."

Dr. Willard, plaintiff's chemical expert, testified that "The disclosures of this patent are unusually complete" (R. 255).

The Accused "Lincolnweld 660" Welding Composition.

The infringing welding composition is known as "Lincolnweld 660 flux." Judge Swygert found:

"The accused Lincolnweld 660 flux is a calcium manganese aluminum silicate with calcium fluoride added, * * *" (Finding No. 21, R. 926).

The Trial Judge in his opinion compared Lincolnweld 660 flux with the preferred composition of the patent, which respondent sells as its *Unionmelt Grade 20, as follows:*

"'So we have here in one case (Unionmelt) a silicate of calcium and magnesium with a little aluminum, and with calcium fluoride, and in the case of Lincolnweld we have silicate of calcium and manganese with a little aluminum and calcium fluoride added'" (R. 919).

Judge Swygert further said in his opinion, which he expressly made a part of his Findings (R. 928):

"The two compositions are identical in operation, and the same kind of weld is produced by them. The

> mechanical methods in which these compositions are employed are essentially similar. A fair construction of the evidence is that Lincolnweld 660 flux can be substituted for Unionmelt Grade 20 without any change in operation or result except that Lincolnweld composition induces a greater amount of manganese into the weld metal" (R. 919).

With respect to the slight excess of manganese, the Trial Court found:

> "In the Lincolnweld 660 flux the slight excess of basic oxide over stoichiometric proportions does not substantially affect its operative character and follows the teaching of the patent" (Finding No. 23, R. 926-27).

The Lincolnweld flux is identical with the preferred welding composition of the patent in each and every respect, with one exception (pp. 3-4 above). The single exception is that manganese oxide has been subsfituted for a large proportion of the magnesium and calcium oxides. Such substitution was expressly taught by the patent as an equivalent composition, as the Trial Court found (Finding No. 24, R. 927).

Judge Swygert, therefore, concluded:

> "A person skilled in the art can produce the accused Lincolnweld 660 flux by following the teaching of the patent in suit" (Finding No. 22, R. 926).

And in the same finding he stated:

> "No evidence was introduced to show that the accused flux was derived from the prior art or by independent experiment, or from any source other than the teachings of the patent in suit" (Finding No. 22, R. 926).

Preparation of Compositions.

The steps in the manufacture of the welding compositions are graphically illustrated by the "Explanatory Chart for the Chemistry of Welding Compositions of Jones *et al.* Patent No. 2,043,960" (Pltf's Ex. 193, off. R. 333, rep. R. 895). A photograph of this exhibit is inserted opposite this page as Figure 2. The exhibit was prepared by Dr. Hobart Willard, plaintiff's chemical expert.

At the bottom of that chart are three bottles of welding composition—

> To the left is the Linde Company's Unionmelt Grade 20, the preferred composition of the patent.
>
> In the middle is Linde's Unionmelt Grade 90, a manganese type of composition which the Linde Company put on the market in 1940 (R. 256-7, 834-5).
>
> To the right is the infringing Lincolnweld 660 flux, also a manganese type of composition first put on the market in 1942 (R. 256-7, 377).

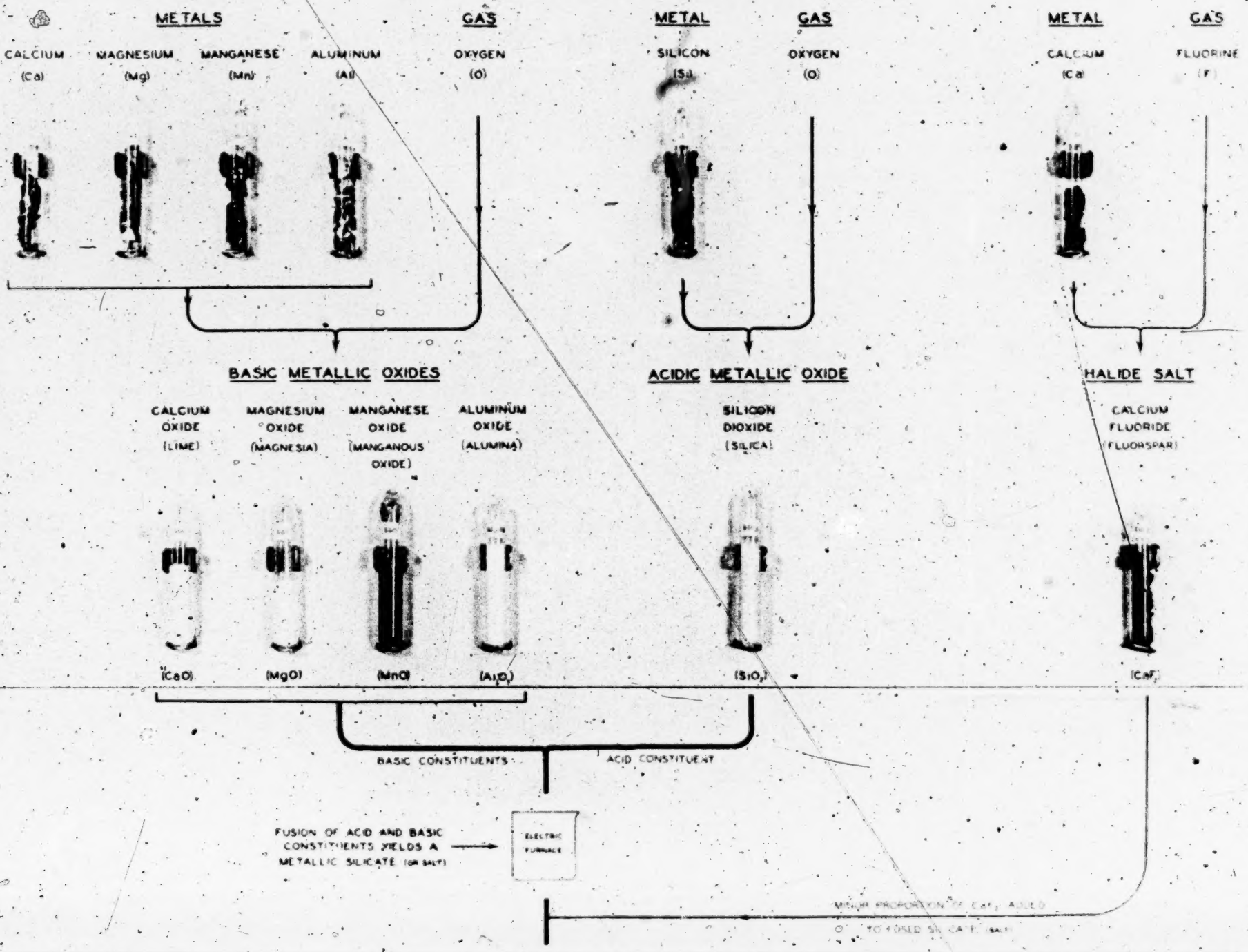
Up at the top of the chart, in the top row, are several small glass bottles containing various chemical elements. These elements are combined in successive steps as we proceed down the chart, as indicated by arrow lines.

The metallic silicate is formed by melting two constituents together in an electric furnace (R. 828)—silica, which is an "acidic" oxide, and a "basic" metallic oxide.

Four basic metallic oxides are shown on the left side of the exhibit. These (and five others which do not enter into the present case) are expressly enumerated in the patent (R. 265).

If we start with calcium oxide, magnesium oxide and a small amount of aluminum oxide, we come out with Unionmelt Grade 20 (R. 264).

EXPLANATORY CHART
FOR
THE CHEMISTRY OF WELDING COMPOSITIONS
OF
JONES ET AL PATENT NO 2,043,980



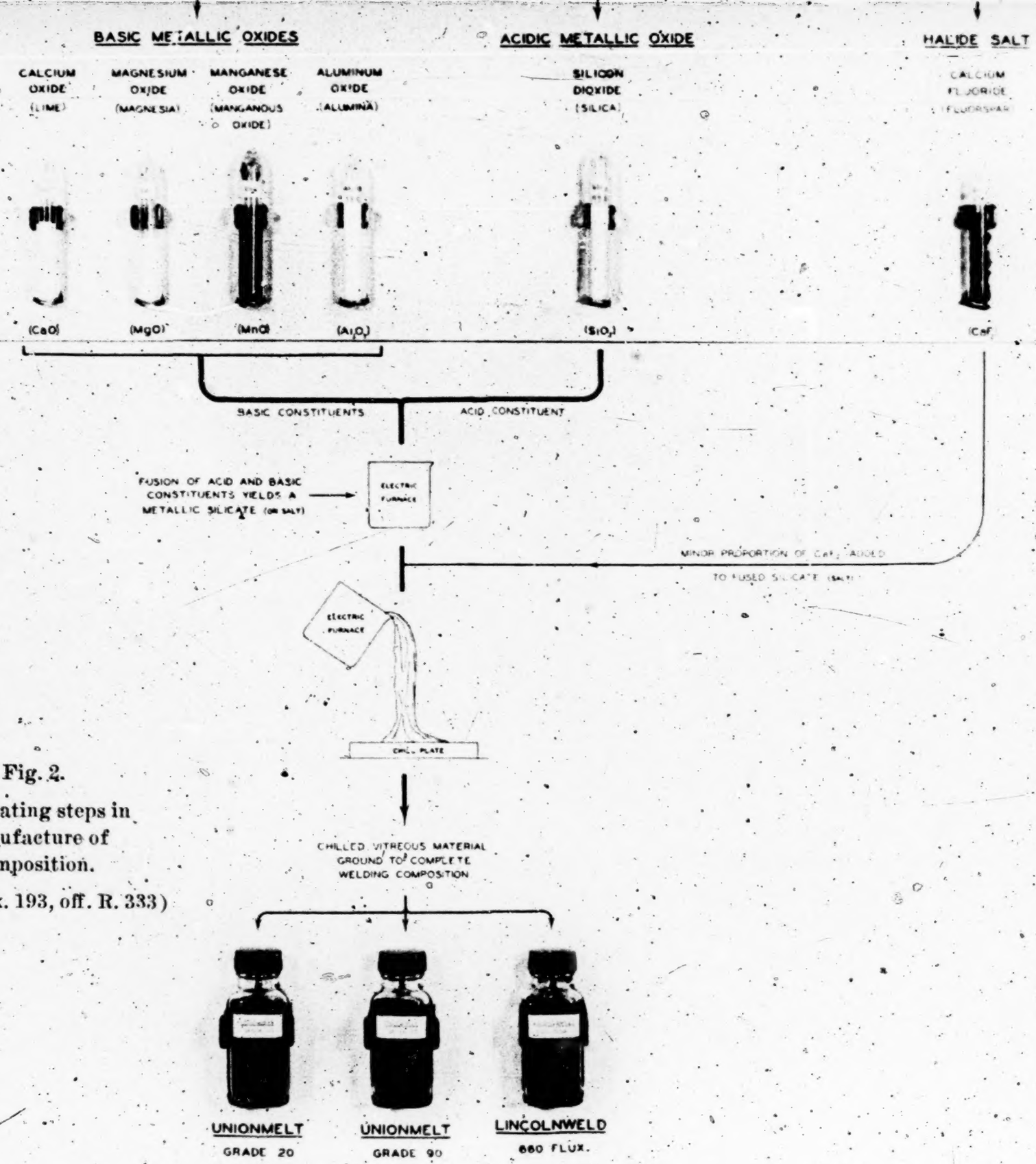


Fig. 2.

Illustrating steps in manufacture of composition.

(Pltf's Ex. 193, off. R. 333)

If we start with a predominant amount of manganese oxide, we come out with Unionmelt Grade 90 or with the accused Lincolnweld 660 flux (R. 264).

To that main constituent, the metallic silicate, is added a minor proportion of a so-called halide salt. Calcium fluoride is the particular halide salt used in all these compositions (R. 264) and is down on the right side of the exhibit.

After the composition is fused in the electric furnace, it is chilled, and the final product ground to proper size of granules (R. 264).

Thus the particular one of these three welding compositions we come out with at the bottom depends simply upon which "basic metallic oxides" we start out with up at the top (R. 264-5). In each case the acid constituent (silica) is the same; and the halide salt (calcium fluoride) is the same; the alumina is present; stoichiometric proportions are used; and the material is prefused and prepared for use in granular form (R. 264).

Another chart has been inserted as Fig. 3, facing the following page, at this point in our brief, headed "Chart Showing Chemical Constituents of Jones & 'Lincolnweld' Welding Compositions." This likewise was prepared by Dr. Willard and is Plaintiff's Exhibit 194 (off. R. 333, rep. R. 896). Printed in the same colors as the original exhibit, it shows in graphic form the substantial identity of the patented composition and the infringing composition.

Facts Bearing on Applicability of Doctrine of Equivalents.

Claim 23 may be taken as typical of the four claims (18, 20, 22 and 23) here involved. It reads:

> "A finely-divided unbonded fusible composition for use in electric welding employing a bare metal

> electrode as a source of weld metal, said composition being substantially free from substances capable of evolving a detrimental quantity of gas under welding conditions and containing calcium fluoride and a major proportion of one or more alkaline earth metal silicates" (p. 6, col. 2, line 13 *et seq.*, R. 960).

The metals calcium and magnesium are alkaline earth metals. The metal manganese is not. (See Findings Nos. 11 and 12, R. 925.)

That posed an issue which the Trial Court squarely faced:

> "Although manganese in its bivalent form has some characteristics of an alkaline earth metal, it is not classed as such in chemical literature. Since the accused flux is composed principally of manganese silicate, it does not literally infringe composition claims 18, 20, 22 and 23. Whether it actually infringes these claims depends upon what application is made of the doctrine of equivalents" (R. 919-20).

On that issue, the Trial Court had the benefit of much testimony and many exhibits and a number of actual demonstrations of welding.

In one actual welding demonstration for the Trial Court (Pltf's Demonstration No. 7; R. 210-211), the seam to be welded was divided into sections:

> The first section was welded with Unionmelt 20,
>
> The second with Lincolnweld 660 flux.

No trace of the transition point from Unionmelt to Lincolnweld was detectable. The welding rod traveled along quietly through the Unionmelt and on into the Lincolnweld 660 flux, without the slightest suggestion of any difference or change (R. 210-11).

Pltf's Ex. 194, Ill. R. 3333

Fig. 3.

CHART SHOWING

CHEMICAL CONSTITUENTS

OF

JONES & "LINCOLNWELD" WELDING COMPOSITIONS

JONES ET AL 2.043.960

PATENT-IN-SUIT

1935-1938

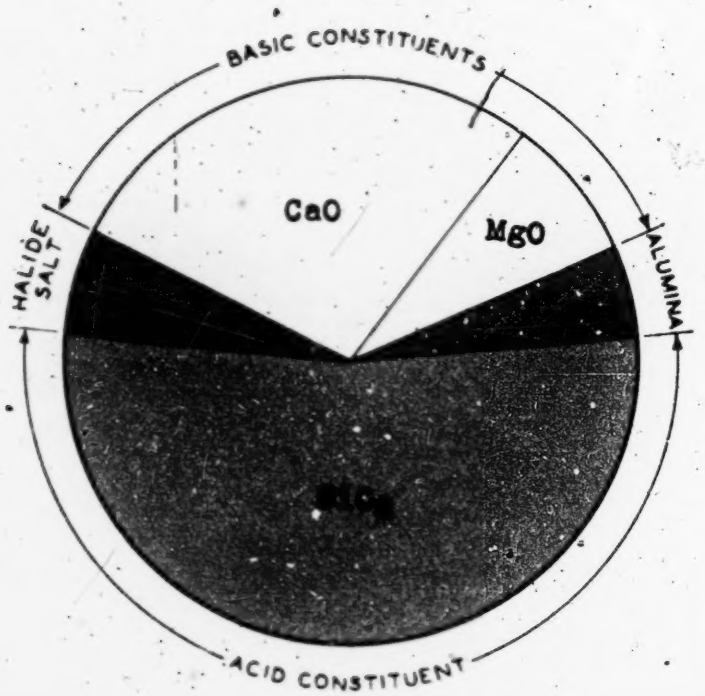


DIAGRAM SHOWING

CONSTITUENTS OF JONES WELDING COMPOSITION NO. 1

JONES ET AL PATENT 2.043.960

(UNIONMELT NO 20)

"LINCOLNWELD" WELDING COMPOSITION

USED BY

DEFENDANTS

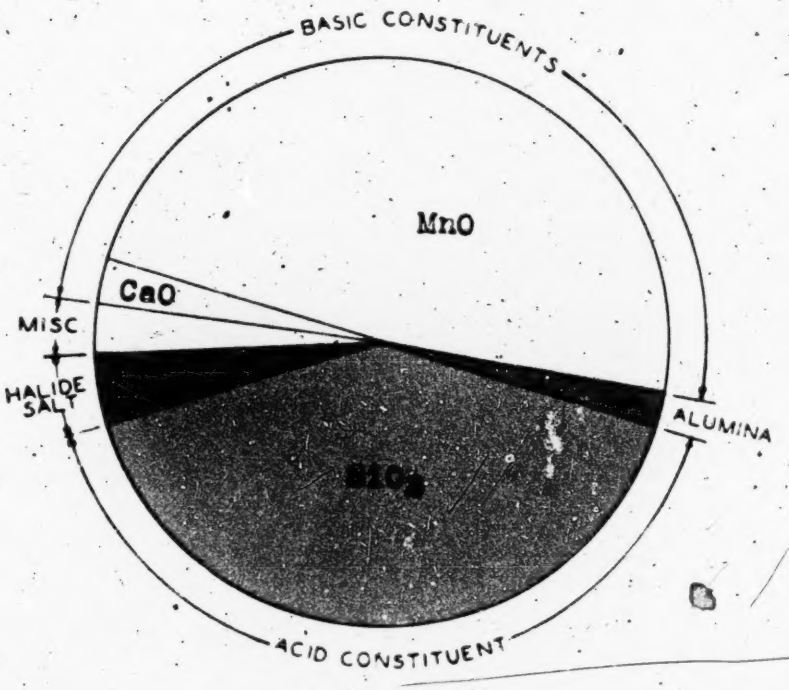


DIAGRAM SHOWING

CONSTITUENTS OF "LINCOLNWELD" WELDING COMPOSITION

(NO 660)

DIAGRAM SHOWING

CONSTITUENTS OF JONES WELDING COMPOSITION NO. 1

JONES ET AL PATENT 2,043,960

(UNIONMELT NO. 20)

Welding compositions which have been used successfully and which serve as representative examples within the invention have the following analyses, by weight:

	I	II	III	IV
Percent CaO	29.5	31.24	29.18	40.12
Percent MgO	8.7	11.01	8.26	0.89
Percent SiO_2	56.4	52.40	57.68	52.94
Percent Al_2O_3	5.4	4.11	4.86	5.80
Percent Fe_2O_3	Low	0.13	0.24	0.23

SILICATES, shown by → Percent CaO, Percent MgO, Percent SiO_2

ALUMINA, shown by → Percent Al_2O_3

CALCIUM FLUORIDE, specified → Before use about 1 part of calcium fluoride was added to 16 parts, by weight, of each of the above compositions.

(Spec., pp.2, col.2, line 64 to pp.3, col.1, line 3.)

DIAGRAM SHOWING

CONSTITUENTS OF "LINCOLNWELD" WELDING COMPOSITION

(NO. 660)

Analysis

LINCOLNWELD "660" ELECTRIC WELDING COMPOSITION

(Flux 4)

SILICATES, shown by	Percent	CaO	2.66
	Percent	MnO	48.19
	Percent	SiO_2	40.30
ALUMINA, shown by	Percent	Al_2O_3.....	1.88
	Percent	Fe_2O_3.....	1.33
CALCIUM FLUORIDE (a Halide Salt) shown by	Percent	CaF_2	3.92
MISCELLANEOUS			
Titanium Oxide		TiO_2	0.10
Magnesium Oxide		MgO	0.60
Barium Oxide		BaO	0.87
Sulphur		S	0.02

Moreover, the completed weld (which is Pltf's Ex. 183, off. R. 212) showed no difference in surface appearance, in cross-section, or in structure of weld metal, between the Unionmelt part and the Lincolnweld part.

Other welding samples were made under identical conditions, one with Unionmelt and the other with Lincolnweld 660 flux (Pltf's Exs. 166, 177, off. R. 149, 192; R. 190-2). The results in every case were substantially identical.

Furthermore, the Trial Court had before it elementary texts on inorganic chemistry in use for many years at the University of Michigan and elsewhere, and also the testimony of the chemical experts, and their tests. Thus:

> " 'The lower oxides of manganese, * * * bear no resemblance to the halogen oxides.' * * * 'In fact, their nearest prototypes are to be found among the oxides of iron, chromium, cobalt, nickel or lead, while in many respects MnO [the bivalent oxide of manganese] acts very much like the oxides of calcium, magnesium, or zinc' " (General Inorganic Chemistry by Paul C. Freer, 1894 edition, R. 332).
>
> "It will be seen that the element manganese changes its character totally with change in valence, and in each form of combination, resembles the same set of elements of valence identical with that which it itself has assumed" (Smith's College Chemistry, 1923 edition, R. 297-98).

Dr. Willard, respondent's chemical expert, had testified (R. 287) that manganese, magnesium and calcium all have bivalent oxides, that they all "combine with silica to form fusible silicates," that "they are all three basic in their reactions" [*i.e.*, "basic" as distinguished from "acid"; *cf.* R. 262-3], that there is "quite a similarity in many of their reactions," that, as an example, "the analyst, when deter-

mining them gravimetrically, weighs them in the form of pyrophosphates."

Similarly, Dr. Booth, petitioners' chemical expert, admitted (R. 669) that "manganese, with a valence of 2, resembles" the "alkaline earth metals" in its "ability to act as a basic element with silica" and does so "more closely than any other member" of its group in the periodic table of elements.

Brennan, chief metallurgist of the Electro-Metallurgical Company and plaintiff's expert on manganese (R. 827, 831), testified that manganese is always calculated along with calcium and magnesium as a "base" in specifying the composition of silicate slags (R. 832), and that manganese is commonly found in nature with one or more of the alkaline earth metals (R. 831).

The similar basicity of manganese and magnesium oxides in litmus tests was demonstrated for the Court (R. 287-288).

Moreover, strong circumstantial evidence of the ready predictability of "equivalence" between manganese and the alkaline earth metals (here calcium and magnesium) is afforded by the inventors' own actions. Thus, when they had finally arrived at their preferred composition, their very next step was to try out a substitution of manganese. Kennedy testified (R. 43):

> "We had come to what we thought was a thoroughly satisfactory flux of that caliber, or that type, made of calcium and magnesium, and we then determined to see whether other materials would act as a base.
>
> "By 'acting as a base', I mean that calcium and magnesium are basic materials, metallurgically. Silica is an acid material, and what we had done up to that time was to react a basic and an acid material. Now, then, we decided to find out whether other

materials which we knew reacted basically, metallurgically, would function in the same way, so we chose manganese dioxide.

"We fused manganese dioxide and silica and welded with it, and I believe our judgment was that it was too penetrating; and then we added calcium fluoride to that, and we made a satisfactory flux of manganese silicate, which established in our minds that manganese would function as a base, as a basic material, in the same manner that calcium and magnesium had."

That most revealing sequence is directly confirmed by the inventors' contemporary notes (Defts' Ex. 88, off. R. 245, rep. R. 1152 *et seq.*; compare test No. 422, using flux No. 68, with tests Nos. 423 and 424, using manganese fluxes, R. 1255-6).

Trial Court's Findings as to Equivalents.

Upon that record the Trial Court summarizes the matter thus (R. 919):

"The following comparison between the Unionmelt and the Lincolnweld compositions was made by Dr. Willard:

"'So we have here in one case (Unionmelt) a silicate of calcium and magnesium with a little aluminum, and with calcium fluoride, and in the case of Lincolnweld we have silicate of calcium and manganese with a little aluminum and calcium fluoride added.'"

The Trial Court continued:

"The two compositions are identical in operation, and the same kind of weld is produced by them. The mechanical methods in which these compositions are employed are essentially similar. A

> fair construction of the evidence is that Lincolnweld 660 flux can be substituted for Unionmelt Grade 20 without any change in operation or result except that Lincolnweld composition induces a greater amount of manganese into the weld metal. It is clear then that for all practical purposes, manganese silicate can be efficiently and effectually substituted for calcium and magnesium silicates as the major constituent of the welding composition" (R. 919).

The Trial Court, after thus summarizing this full body of proof, goes on to point out that the further issue as to whether the "equivalent" was "known" can be readily resolved in this particular case, for the patent itself spells it out.

Thus, after stating that the issue of infringement "depends upon what application is made of the doctrine of equivalents," the Trial Court continues:

> "In that connection, no determination need be made whether it is a known chemical fact outside the teachings of the patent that manganese is an equivalent of calcium or magnesium. In the patent the inventors state, 'We have used calcium silicate and silicates of sodium, barium, iron, manganese, cobalt, magnesium, nickel and aluminum, both in binary and ternary combinations, in various proportions.' Thus, the fact that manganese is a proper substitute for calcium silicate as a major ingredient of the welding composition invented by Jones, Kennedy and Rotermund is fully disclosed in the specification of their patent" (R. 920; emphasis in original).

Petitioners themselves faced the issue of "equivalents" as a question of fact at the conclusion of the trial. They submitted proposed findings of fact, one of which was:

> "(g) Manganese is not an alkaline earth metal, and manganese silicate therefore cannot be con-

sidered to be an alkaline earth silicate; nor is it an equivalent thereof" (R. 939).

The Trial Court, while he found that manganese is not classed as an alkaline earth metal in chemical literature (R. 919), flatly rejected and refused the proposed finding that manganese is not an equivalent.

Instead, and on the contrary, the Trial Court did find (R. 925-27), upon the basis of the testimonial record before him, that:

"20. The accused Lincolnweld flux and the composition of the patent in suit are substantially identical in operation and in result.

"21. The accused Lincolnweld 660 flux is a calcium manganese aluminum silicate with calcium fluoride added, which in welding operation is in all respects equivalent to the compositions of the patent in suit. Said flux contains:

Constituent	Per Cent (by weight)
CaO	2.66
MnO	48.19
SiO_2	40.30
Al_2O_3	1.88
Fe_2O_3	1.33
CaF_2	3.92
TiO_2	0.10
MgO	0.60
BaO	0.87
S	0.02

"22. A person skilled in the art can produce the accused Lincolnweld 660 flux by following the teaching of the patent in suit. No evidence was introduced to show that the accused flux was derived from the prior art or by independent experiment, or from any source other than the teachings of the patent in suit."

Further, the Trial Court did find in respect of the patent disclosures taken in light of the experts' testimony that:

> "13. Manganese silicate is one of the nine metallic silicates which the specification discloses that the inventors have used as principal constituents in welding compositions attaining more or less effectively the objectives of their invention.
>
> "14. The patent discloses that manganese silicate, when used as a principal constituent of a welding composition prepared according to the teachings of the patent, is a proper substitute for the silicates of the alkaline earth metals.
>
> "23. In the Lincolnweld 660 flux the slight excess of basic oxide over stoichiometric proportions does not substantially affect its operative character and follows the teaching of the patent.
>
> "24. The patent in suit teaches the substitution of manganese for other basic oxides and is not limited to the use of a moderate amount of manganese in addition to other basic oxides."

The Trial Court investigated and determined all fact issues with painstaking care. As Mr. Justice Jackson pointed out in his opinion:

> "This trial occupied some three weeks, during which, as the record shows, the trial judge visited laboratories with counsel and experts to observe actual demonstrations of welding as taught by the patent and of the welding accused of infringing it, and of various stages of the prior art. He viewed motion pictures of various welding operations and tests and heard many experts and other witnesses. He wrote a careful and succinct opinion and made findings covering all the factual issues" (336 U. S. 271, 274-5).

On the basis of these findings of fact, the Trial Court reached the conclusion of law that petitioners had actually infringed claims 18, 20, 22 and 23 (Conclusion 4, R. 928) and entered the judgment of infringement, which the Court of Appeals and this Court have now affirmed.

Summary of Argument.

The record here shows this to be an invention of such stature as to "dwarf" all previous welding. The heart of this invention is a unique and carefully tailored composition. The four claims, it has been conclusively decided, describe the invention with all the particularity required by R. S. 4888.

Remaining only is the question: Can the petitioners here appropriate that invention from the patent itself by deliberately copying the composition and substituting in that composition one ingredient for another—a substitution any competent chemist could make, and indeed, a substitution the patent itself teaches?

"No," has been the answer of both lower courts, which determined all fact issues in favor of the respondent.

"No," has been the answer of this Court in like situations as long as there has been a patent system, and in this very case.

The rationale has been the doctrine of equivalents. This is the doctrine which applies in the patent field the general principle that substance, rather than form or verbalism, shall be controlling.

Petitioners confess that they are impaled by the doctrine of equivalents by their demand that the doctrine be "expressly repudiated."

No set of facts could better demonstrate the need for the doctrine than those here presented.

ARGUMENT.

POINT I.

Judge Swygert Found Petitioners Guilty of Infringement Because Their Lincolnweld 660 Flux Merely Substituted an Equivalent for One Ingredient and Was Otherwise Identical in Each and Every Respect With the Patented Composition.

The doctrine of equivalents is a practical, common sense rule applied in patent infringement cases for many years. Under that rule, an infringer is held accountable although he has made colorable variations in one or more ingredients of the claimed composition or device.

The rule is stated in 3 Walker On Patents (Deller's ed. 1937), §464, at page 1700, as follows:

> "No substitution of an equivalent for any ingredient of a combination covered by any claim of a patent can avert a charge of infringement of that claim, [citations] whether or not the equivalent is mentioned in the patent."

Whether an ingredient is an "equivalent" is a question of fact. Does it function in the same way and produce the same result?

As stated by Judge Learned Hand in *Musher Foundation, Inc.* v. *Alba Trading Co., Inc.*, 150 F. 2d 885, 887 (2d Cir. 1945), *cert. denied*, 326 U. S. 770 (1945):

> "Of course, the fact that verbally the infringing process is not within the claim is no objection to the application of the doctrine of equivalents; indeed it creates the very occasion which should evoke it."

An early instance closely paralleling the present case, is to be found in *Matthews v. Skates*, 16 Fed. Cas. 1133, 1135, No. 9291 (C. C. Ala. 1860). The relevant portion of the trial judge's charge to the jury reads:

> "The principal difference between the two compounds, according to the testimony of this witness, is, that in Cox's, zinc is used, while in the defendants', copper, in place of zinc. It is insisted on the part of the plaintiff, that even if this be so, copper is, in such a composition, an equivalent of zinc, and its use instead of zinc, does not prevent the manufacture from being an infringement of Cox's patent. The law on this subject is, that where a patent is granted for a composition made of several ingredients, it covers and embraces known equivalents of each of the ingredients.
>
> "An equivalent of any substance is another substance having similar properties and producing substantially the same effect. Whether in such a composition as this, copper is an equivalent of zinc, is a question of fact for you to decide from the evidence, if you consider it material. Under the charges given, you will decide whether the defendants have or have not infringed on the plaintiff's patent right."

In similar fashion, Judge Swygert in the present case, sitting without a jury, had to determine whether or not manganese was the equivalent of the metals magnesium and calcium when used in this welding composition.

Infringers are on notice that every patent claim is to be read as including the words "or equivalent." Those words are implied in the claim as a matter of law.

In earlier days, they were sometimes expressly set out. For example, that was done in the second claim of Morse's patent on the telegraph, held valid and infringed by this

Court in *O'Reilly* v. *Morse*, 15 How. 62 (U. S. 1853) [this claim appears at p. 85].

But before the turn of the century, the doctrine of equivalents had become universally established, and the Commissioner of Patents forbade further use of the actual word "equivalent" in a claim. Ex parte *Cook*, 1890 C. D. 81.

In that case it was said:

> "An inventor is always entitled to equivalents—that is to say, to devices which operate in substantially the same way to accomplish substantially the same result in a combination. In the present case if the applicant desires nothing more than the benefit of the law of equivalents, the expression 'or equivalent cleaning device' is surplusage. If he desires some advantage beyond that which the law of equivalents gives him, he is seeking more than can properly be accorded to him" (p. 82).

That ruling was reiterated in Ex parte *Phillips*, 1908 C. D. 195, 196, with particular application to claims for a chemical composition.

The principle became a part of the warp and woof of the patent system. More than fifty years have ensued. All patentees have accepted their claims with the understanding that the right to equivalents was necessarily implied in every claim, and that no express reservation of equivalents was required nor, indeed, permitted.

The Fact Issues Under the Doctrine of Equivalents as Stated in the *Halliburton* Case.

The doctrine of equivalents has been so long and well established that this Court has not had occasion to pass on it directly for a number of years. The matter, however, was considered in formulating the principles laid down in *Halliburton Oil Well Cementing Co.* v. *Walker*, 329 U. S. 1 (1946).

In that case blanket claims relating to Walker's improved apparatus for measuring the depth of the fluid surface in an oil well were held invalid. As drawn, his claims were broader than the invention; they had a scope far beyond the device invented by Walker and its actual equivalents. In discussing the "overhanging threat of the functional claim of Walker," this Court stated:

> "Yet if Walker's blanket claims be valid, no device to clarify echo waves, now known or hereafter invented, whether the device be an actual equivalent of Walker's ingredient or not, could be used in a combination such as this, during the life of Walker's patent" (329 U. S. at p. 12).

In its opinion, this Court went on the assumption that the doctrine of equivalents would have given Walker the protection he was entitled to, as against an actual equivalent of the device he had invented, if he had accurately described his invention in his claims. The Court's opinion, we submit, contains a sound statement of the doctrine of equivalents:

> "Had Walker accurately described the machine he claims to have invented, he would have had no such broad rights to bar the use of all devices now or hereafter known which could accent waves. For had he accurately described the resonator together with the Lehr and Wyatt apparatus, and sued for infringement, charging the use of something else used in combination to accent the waves, the alleged infringer could have prevailed if the substituted device (1) performed a substantially different function; (2) was not known at the date of Walker's patent as a proper substitute for the resonator; or (3) had been actually invented after the date of the patent" (329 U. S. at p. 13).

And this Court characterized its opinion as being in harmony with that of *Continental Paper Bag Co.* v. *Eastern*

Paper Bag Co., 210 U. S. 405 (1908), which petitioners here say "has come to be regarded as the leading case on the doctrine of equivalents" (Petitioners' Br., p. 53).

Applying this Court's statement in the *Halliburton* case, the three fact issues, in terms of the present case, are:

(1) Does manganese, when substituted in the patented welding composition, perform a substantially different function?

(2) Was manganese known at the date of the Jones *et al.* patent as a proper substitute?

(3) Was the substitution of manganese actually invented after the date of the Jones *et al.* patent?

On all three issues, Judge Swygert in the Trial Court found the facts in respondent's favor, and adversely to petitioners.

(1)

Identity of Function and Result.

Substantial identity of function is the first point of "equivalence" referred to in the *Halliburton* case. In the case of a chemical substituted in a composition, it must function substantially the same in that composition, although not necessarily in other types of compositions, and it must produce substantially the same result.

In the present case, Judge Swygert found that manganese silicate does function, in this welding composition, precisely the same as the magnesium calcium silicate it replaces, saying:

> "The two compositions are identical in operation, and the same kind of weld is produced by them. • • • It is clear then that for all practical purposes, manganese silicate can be efficiently and

effectually substituted for calcium and magnesium silicates as the major constituent of the welding composition." (Opinion, R. 919).

Such identity of operation is also set out in Finding No. 20:

> "The accused Lincolnweld flux and the composition of the patent in suit are substantially identical in operation and in result" (R. 926).

Other findings of fact on this point are set forth *supra*, pages 19-20.

On the basis of these findings Judge Swygert held that there was actual infringement. The correctness of that holding is well illustrated by one of the leading decisions applying the doctrine to compositions, *Woodward* v. *Morrison*, 30 Fed. Cas. 556, No. 18,008 (C. C. Mass. 1872). The patentee in that case had invented an improved prepared paste.

Defendants substituted chloride of zinc for the chloride of sodium referred to in the patent. The circumstances of the case give special point to the matter of equivalence for a particular purpose, since zinc chloride is a well known poison and sodium chloride is common table salt. They are certainly not equivalent on the dinner table.

In his decision Judge Shepley defined the question of equivalents as follows:

> "Is the metallic chloride which the defendant uses in his process a known chemical equivalent for the metallic chloride which the complainant uses,—not a chemical equivalent in every respect and for every purpose, but an equivalent in this particular process, contributing to produce the same composition of matter by substantially the same chemical action

in combination with the other ingredients of the product?" (p. 559.)

This question was resolved in the patentee's favor.

> "Now, it is obvious that, for all purposes and in combination with all other substances, the chloride of zinc is no more a chemical equivalent for the chloride of sodium than, under all possible conditions, the sulphate of copper referred to in the specification of defendants' patent would be a chemical equivalent for the chloride of zinc; but it is equally obvious from the testimony in this case that, for the purposes of manufacturing the product of a preserved and innocuous paste, the chloride of sodium and the chloride of zinc are, when used as described in the respective patents, practically the equivalents of each other, because in the process of manufacture they practically produce the same results" (p. 559).

Similarly, this Court, in *American Fruit Growers, Inc.* v. *Brogdex Co.*, 283 U. S. 1, 14 (1931), referred to borax, having an alkaline reaction, and boracic acid, as "equivalents"; and this Court cited Walker On Patents §426 (6th ed. 1929), where it is stated:

> "An equivalent for one ingredient of a patented composition of matter is anything which in the composition performs the same function as that ingredient."

And, in *Dennis* v. *Pitner*, 106 F. 2d 142 (7th Cir. 1939), *cert. denied*, 308 U. S. 606 (1939), Judge Evans said:

> "In determining whether they are equivalents in a patent sense, we must consider the qualities for which they are used in the patent" (p. 148).

To the same effect, see:

Sanitary Refrigerator Co. v. *Winters*, 280 U. S. 30, 41-43 (1929);

Grant Paper Box Co. v. *Russell Box Co.*, 154 F. 2d 729, 731 (1st Cir. 1946), *cert. denied*, 329 U. S. 741 (1946);

Treibacher-Chemische-Werke, etc. v. *Roessler & H. C. Co.*, 219 Fed. 210, 212-213 (2d Cir. 1914).

The cases cited above also demonstrate that, in the words of the court in *Haynes Stellité Co.* v. *Chesterfield Co.*, 25 F. 2d 719 (6th Cir. 1928):

> "* * * equivalency does not mean complete identity. It means rather substantial identity of result, accomplished by means not substantially different."

The cases cited by petitioners themselves recognize these principles (*e.g.*, cases cited in Petitioners' Br., p. 51, fn. 36; pp. 52-53, fn. 37). But petitioners rejoin, albeit feebly, by claiming that "the accused flux does something the Jones flux does not: It introduces manganese into the weld metal" (Petitioners' Br., p. 53, fn., last paragraph).

That rejoinder, however, was squarely rejected in the Trial Court's findings. Judge Swygert mentioned the inducement of a "greater amount of manganese into the weld metal" and immediately rejected it as an insubstantial distinction, holding the two fluxes to be the same "for all practical purposes" (Opinion, R. 919).

(2)

Manganese Known to be an Equivalent at Date of Jones *et al.* Patent.

The second question of fact, under this Court's opinion in the *Halliburton* case, *supra*, is whether the substituted equivalent was

"known at the date of [the] patent as a proper substitute."

Over many years, the courts have wrestled with the problem of whether or not "an equivalent" must have been recognized as such at the date of the patent. A number of decisions are to the effect that even the later discovery of the equivalency of a substance qualified it as a legal "equivalent," despite its later date.

See, *e.g.*,

American Sulphite Pulp Co. v. *Howland Falls Pulp Co.*, 80 Fed. 395, 410 (1st Cir. 1897);
Steel & Tubes Inc. v. *Clayton Mark & Co.*, 21 F. Supp. 326, 330 (D. Del. 1937);
3 Walker on Patents (Deller's ed. 1937) § 465 at page 1702.

But in the present case the problem of an unknown equivalent is not involved, for there is no suggestion of a later discovery.

Petitioners do not question this fact.

The Trial Judge found that even the patent itself taught that manganese is an equivalent:

> "In that connection [*i. e.*, in determining what application should be made of the doctrine of equivalents], no determination need be made whether it is a known chemical fact outside the teachings of the patent that manganese is an equivalent of calcium or magnesium" (Opinion, R. 920; emphasis in original).

The Trial Court further found:

> "Manganese silicate is one of the nine metallic silicates which the specification discloses that the inventors have used as principal constituents in

welding compositions attaining more or less effectively the objectives of their invention" (Finding No. 13, R. 925).

"The patent discloses that manganese silicate, when used as a principal constituent of a welding composition prepared according to the teachings of the patent, is a proper substitute for the silicates of the alkaline earth metals" (Finding No. 14, R. 925).

Nor is this patent limited to the use of manganese in merely minor amount—a point of some importance, since the claims in question speak of "major proportion." Faced with a conflict of expert testimony on this point (see R. 289-90 and R. 650), Judge Swygert squarely found:

"The patent in suit teaches the substitution of manganese for other basic oxides and is not limited to the use of a moderate amount of manganese in addition to other basic oxides" (Finding No. 24, R. 927).

The Trial Court found as a fact that any competent chemist, skilled in the field, could make the Lincolnweld flux simply by reading the directions of the patent:

"A person skilled in the art can produce the accused Lincolnweld 660 flux by following the teaching of the patent in suit. No evidence was introduced to show that the accused flux was derived from the prior art or by independent experiment, or from any source other than the teachings of the patent in suit" (Finding No. 22, R. 926).

(3)

This Substitution Was Not "Invented After the Date of the Patent."

The third case in which an alleged infringer could prevail, under this Court's opinion in the *Halliburton* case,

supra, is where he can show that his substituted device or composition was

> "actually invented after the date of the patent."

Thus the doctrine of equivalents does not operate as an implied threat to stifle future research. A substitution which requires an independent invention is not a proper legal equivalent. The doctrine applies solely to equivalents which are within the ordinary capacity of a mechanic or chemist skilled in the art.

This Court stated in *Dow Chemical Co.* v. *Halliburton Oil Well Cementing Co.*, 324 U. S. 320, 330 (1945):

> "It is elemental that the mere substitution of equivalents which do substantially the same thing in the same way, even though better results may be produced, is not such an invention as will sustain a patent."

Petitioners cannot even lay claim to exercising the ordinary skill of a mechanic or chemist learned in the welding art.

Far from having increased the store of knowledge by independent research, petitioners were found guilty of appropriating their flux directly from the text of the patent. Judge Swygert said:

> "In this connection, the lack of any evidence of independent research or experiments by the Lincoln Electric Company in originating Lincolnweld 660 flux creates an inference that the teaching of the patent in suit was the sole origin of that composition" (Opinion, R. 920).

Petitioners had every reason to come forward with evidence of independent research or experiments. Instead, as the Trial Court well knew, petitioners strenuously opposed respondent's efforts, in pre-trial discovery proceedings, to obtain the production of their laboratory records

showing how they derived the Lincolnweld 660 flux (see R. 20-21). Mr. Lincoln was his own principal witness at the trial but offered not a word of explanation as to the source of his flux.

What do petitioners, caught red-handed, have to say?

Near the top of page 34 of their brief, petitioners refer to Judge Swygert's finding as to the source of their knowledge and they say it is "seemingly a finding of fact" which somehow should be regarded as a "rule of law." Again at page 36 they refer to this Court's "mistaken belief it was dealing with a question of fact." How the source of their knowledge can be a "rule of law" and not a question of fact, they fail to explain.

Again on page 36 they assert that the fact that petitioners got their flux solely from the teaching of the patent in suit, even if true, "would be immaterial." And here again they do not even attempt to explain how they can make such assertions, in the face of this Court's opinion in the *Halliburton* case and the authorities cited below (see pp. 44-48, 50-51, 54-55).

Thus feebly do they attempt to obscure this most damning and important fact—a fact expressly found by the Trial Court,— a fact clearly material under the authorities.

POINT II.

The Great Merit of the Jones *et al.* Invention Required That the Doctrine of Equivalents Be Applied to Secure to the Inventors the Benefit of Their Valid Claims.

The Trial Court's findings as to the great merit of the Jones *et al.* invention are material and should be given much weight in applying the doctrine of equivalents.

This Court said in *Eibel Process Co.* v. *Minnesota & Ontario Paper Co.*, 261 U. S. 45, 63 (1923):

> "In administering the patent law the court first looks into the art to find what the real merit of the alleged discovery or invention is and whether it has advanced the art substantially. If it has done so, then the court is liberal in its construction of the patent to secure to the inventor the reward he deserves. If what he has done works only a slight step forward and that which he says is a discovery is on the border line between mere mechanical change and real invention, then his patent, if sustained, will be given a narrow scope and infringement will be found only in approximate copies of the new device. It is this differing attitude of the courts toward genuine discoveries and slight improvements that reconciles the sometimes apparently conflicting instances of construing specifications and the finding of equivalents in alleged infringements."

The testimony was uncontradicted that the Jones invention represented a great stride forward in the welding art. That is another most remarkable feature of this case.

The opinion of this Court quotes with approval the statement of the Trial Court:

> "The truly remarkable difference, however, between what Jones, Kennedy and Rotermund invented and what had gone on before is perhaps best manifested by the performance achievement of their invention" (336 U. S. 271, 274).

The concurring opinion finds that the facts in the present case show patentable discovery when measured by the standards announced by this Court in *Cuno Engineering Corp.* v. *Automatic Devices Corp.*, 314 U. S. 84 (1941).

Eloquent tribute to the unique achievement of Jones *et al.* comes from the record of the cross-examination of petitioners' president, Mr. James Finney Lincoln. He was asked on cross-examination whether prior to Jones he knew of any process which butt welded 2½ inch plate in a single pass, or which employed currents at 2,000 amperes and above, or which could weld 12 gauge plate at the rate of 120 inches per minute—and to each of these questions, Mr. Lincoln was forced to admit that he did not (R. 466).

The Trial Court's findings and the uncontradicted testimony establish the Jones *et al.* invention as one of the most important inventions to come before this Court in many years. The facts are summarized in our earlier brief, and we respectfully suggest that the Court turn to that brief and read pages 20-29 under the headings "Outward Appearance of Jones *et al.* Welding," "Performance Capabilities" and "Importance to Industry." There we give a few illustrations of the scope and variety of the applications of the Unionmelt process.

In our earlier brief, the Court will see the picture of the large welded sub-assembly being lowered into place in a ship under construction on the shipway. With the Unionmelt welding process the elapsed time for the construction of a ship was reduced from ten months to three months (R. 358-9). Each shipway could turn out three or four times as many ships.

All shipyards building ships for the Maritime Commission used the Unionmelt welding process and 5,000 or more ships were built for the Maritime Commission (R. 366). This country most desperately needed those ships when war broke out in Europe and the battle of the Atlantic was being fought.

To take another illustration, the Unionmelt process was adopted by the General Electric Company to weld the super-

charger wheel in the turbo supercharger used in Army bombers and fighter planes. This invention reduced the welding time down to five minutes compared with one and one-half hours, the best time previously accomplished (R. 382).

What answer do petitioners make? What do they have to say about the facts as to this revolutionary advance, the "truly remarkable difference," these performance achievements which "dwarf those of any other method"?

They are not able to say one word. They do not even attempt to answer or explain. One can read their briefs and arguments most carefully from cover to cover and not get any idea that these facts were in the case.

The nearest they come to the point is in a parenthetical statement, hidden away in a footnote to their brief (p. 52, fn. 37), where petitioners assert that the Jones invention is not of a "pioneer character," entitled to "a greater degree of liberality and a wider range of equivalents."

The opinion of this Court, quoted above, is to the contrary.

Where the invention constitutes a major advance in the art, it is entitled to liberal protection. Thus, this Court commented with respect to Eibel's invention (which resulted in a 20% increase in speed):

> "In the case before us, for the reasons we have already reviewed, we think that Eibel made a very useful discovery which has substantially advanced the art. His was not a pioneer patent, creating a new art; but a patent which is only an improvement on an old machine may be very meritorious and entitled to liberal treatment" (*Eibel Process Co.* v. *Minnesota & Ontario Paper Co.*, 261 U. S. 45, 63 (1923)).

As stated in *Miller* v. *Eagle Manufacturing Co.*, 151 U. S. 186, 207 (1894):

> "The range of equivalents depends upon the extent and nature of the invention. If the invention is broad or primary in its character, the range of equivalents will be correspondingly broad, under the liberal construction which the courts give to such inventions."

This statement was specifically reaffirmed by this Court in *Continental Paper Bag Co.* v. *Eastern Paper Bag Co.*, 210 U.S. 405, 414 (1908), and there are many others to the same effect. See, *e.g.*, cases collected in 3 Walker On Patents (Deller's ed. 1937) §433 at page 1714 *et seq.*

Reliance Upon the Doctrine of Equivalents, as Recommended by This Court, Was the Course Pursued by the Inventors Here in the Dilemma Which Faced Them.

Inventions which make a great stride forward are the most difficult to claim by a form of words fairly delimiting the rights it is the purpose of the patent statutes to grant. It is difficult, if not impossible to do this, as respects an outstanding invention, without leaving a verbal loophole for those who deliberately copy the inventions of others.

This difficulty, as pointed out by Judge Learned Hand, naturally found its resolution in the doctrine of equivalents. In *Royal Typewriter Co.* v. *Remington Rand Inc.*, 168 F. 2d 691 (2d Cir. 1948), *cert. denied*, 335 U. S. 825 (1948), Judge Hand stated:

> "It is true that a boundary cannot be drawn with precision; and the draftsman of claims is always in something of a dilemma—the dilemma which has led to the very 'doctrine of equivalents' itself. He must pick out those elements of the manifold which together make up the invention, for so the statute requires: 'he shall particularly point out and dis-

> tinctly claim the part, improvement, or combination which he claims as his invention or discovery.' On the one hand, if he confines himself rigidly to those elements as they appear in the specifications, he deprives the patent of any practical value, because it is always, or almost always, possible to change the form of these as they appear, and yet cull the full advantage of the discovery. On the other hand, if he too much abandons the elements as they are disclosed, he will not 'particularly point out * * * the part * * * or combination which he claims': i.e. he will have so far generalized the disclosure, that the combination of any elements which will effect the same result will be covered. The patent will then pro tanto stifle progress in the art and be invalid. * * * It is always a question of degree, and courts have differed, and always will differ, as to the allowable latitude in a given instance * * *" (pp. 693-4).

This Court in the *Halliburton* case recommended that a draftsman, faced with such a dilemma, should rigorously fulfill the statutory demand for particularity and rely on the protective effect of the doctrine of equivalents. That is precisely the course pursued by the patentees in the case at bar.

Take specifically the problem facing the draftsman of the Jones *et al.* claims.

There were nine metallic silicates coming within the invention and actually listed in the specifications (Finding No. 13, R. 925; p. 2, col. 1, lines 55-58, R. 956).

The only chemical terms embracing all of those nine are "silicates" and "metallic silicates." Claims 24 and 26 of the patent utilized those broad classifications. But those claims have now been held too broad and therefore invalid—not because they included the nine metals, but because they unambiguously covered a great many other things and could not be construed as being limited to the nine metals.

The next most comprehensive chemical classification, in a descending scale, is that used in drafting the four claims held valid, namely, "alkaline earth metals." That classification included only three of the nine metals, that is, calcium, barium and magnesium (Finding No. 11, R. 925). The doctrine of equivalents is necessary for the protection of the other six.

The question may be asked why it was not possible, as a compromise between the two steps of classification noted above, to obtain a claim specifically listing the nine metals found by the inventors to be satisfactory. The answer is that Patent Office practice does not permit that type of claim.

There is a type of claim permitted by the decision of the Commissioner in Ex parte *Markush*, 1925 C. D. 126. The *Markush* decision approved a type of claim to a composition in which one constituent was specified as "selected from the group consisting of [naming the materials found suitable]." The Commissioner offered as one reason for his decision his belief that the inventor should "not be forced to rely upon the doctrine of equivalents for his proper protection" (p. 128).

But the use of this so-called "*Markush* type claim" was very soon restricted to those instances, and only those instances, where the specified list of substances formed a part of what had already been recognized at some earlier date as a distinct chemical class or genus: Ex parte *Palmer*, 1930 C. D. 3. The rule is succinctly stated by the Commissioner in Ex parte *Burke*, 1934 C. D. 5, 7:

> "The Markush decision was not designed to give an applicant generally a different kind of patent claim from that enjoyed prior to the decision and surely did not contemplate the joinder under one

> group of a plurality of substances solely because they could all be made use of to a common end in a process or composition. The Markush group was limited, and properly so, to substances having in addition a community of chemical or physical characteristics definitely recognized in scientific classification."

That restrictive rule imposed by the Commissioner has been consistently upheld by the United States Court of Customs and Patent Appeals: In re *Swenson*, 132 F. 2d 336 (C. C. P. A. 1942); In re *Kingston*, 149 F. 2d 181 (C. C. P. A. 1945); In re *Ruzicka*, 150 F. 2d 550 (C. C. P. A. 1945); In re *Thompson*, 154 F. 2d 189 (C. C. P. A. 1946).

Although the requirement of previous recognition of some generic "class" for the materials can be and has been questioned as to its wisdom and logic, the rule so stood when the inventors here procured their patent, and it still stands.

A so-called *Markush* type of claim was thus foreclosed to the present inventors. It was foreclosed because in the instant case, the nine metals in question are not all found in any single known chemical class. Indeed, two of them, aluminum and calcium, are two of the very three metals which the court refused to permit to be named together in a claim in the *Kingston* case just cited.

To have drawn a series of nine individual claims to respective ones of the nine metals would have entailed dividing them up among a whole series of separate patents. Rule 41 of the Patent Office limits species claims to a maximum of three in any one patent and permits that many only when there is also a generic claim allowed. To divide the invention among a whole series of patents would not have contributed any benefit to the public and would have en-

tailed a grave risk of invalidity for "double patenting" *cf. Suffolk Co.* v. *Hayden*, 3 Wall. 315, 319 (U. S. 1865).

Accordingly, the only feasible course here appears to have been the one the inventors adopted. They drew their claims in terms of "alkaline earth metals," the recognized chemical class which embraced three of the nine metals in question, and relied upon an application of the doctrine of equivalents for protection on the others.

Such reliance in no way requires a result inconsistent with the foregoing decisions of the Patent Office. As we have shown above (pp. 23-24), the Commissioner has at all times recognized that every patent claim is to be read as including the words "or equivalents."

The case at bar, therefore, presents precisely the situation which should lead to an application of the doctrine of equivalents, under the broad principle stated by Mr. Chief Justice Marshall in the leading case of *Grant* v. *Raymond*, 6 Pet. 218, 242 (U. S. 1832):

> "The laws which are passed to give effect to this purpose ought, we think, to be construed in the spirit in which they have been made; and to execute the contract fairly on the part of the United States, where the full benefit has been actually received; if this can be done, without transcending the intention of the statute, or countenancing acts which are fraudulent, or may prove mischievous. The public yields nothing which it has not agreed to yield; it receives all which it has contracted to receive."

POINT III.

The Doctrine of Equivalents Should Not be "Expressly Repudiated" by Requiring Completely Literal Infringement.—In Answer to Point II, pages 45-60, of Petitioners' Brief.

Nowhere do petitioners more nakedly reveal their position than in their blunt demand that this Court "expressly repudiate" the doctrine of equivalents.

These are the petitioners who derived their flux from the patent in suit (Finding No. 22, R. 925)—who have thus boldly copied an invention so great that it "dwarfed" all that had gone before (Opinion, R. 907).

It is they who now coolly concede that the "patentees knew" that the appropriated flux "was operable" and that it "would produce a good weld" (their Br., p. 38).

These are the petitioners who now insist that this Court overturn a hundred years of case law.

It is such petitioners who now argue that this Court's insistence upon particularity in claim drafting—upon reality of definition in place of nebulous generality of expression—should be perverted into an abdication of the Court's own prerogative to distinguish between substance and verbalism.

Neither the circumstances of the case nor the content of petitioners' arguments urge toward so radical a step as the "repudiation" they ask.

Petitioners' whole line of argument on repudiation is clearly outside the order on reargument. That order requests argument "as to the applicability of the doctrine of equivalents," not as to whether that doctrine should be "expressly repudiated." Nor, indeed, did the petitioners suggest any such issue in their petition for rehearing.

The Court was well aware of the existence of the doctrine of equivalents and phrased its order:

> "The Court desires argument as to the applicability of the doctrine of equivalents to the findings of fact in this case" (337 U. S. 910).

The Doctrine of Equivalents Is a Necessary Implementation of R. S. 4919 and Is Entitled to a Presumption of Congressional Approval.

The statute does not define "infringement." It uses that word in referring to an invasion of the patentee's rights (for example, R. S. 4919, 35 U. S. C. §67 (1940), authorizing a suit to recover damages for "the infringement of any patent"). But Congress has left to the courts the development of criteria for determining when the statutory rights granted to patentees have been invaded.

The courts have refused to adopt any rigid, all inclusive definition, but have proceeded case by case in the tradition of the common law. The doctrine of equivalents is a logical outgrowth of this development. It expresses in the patent field the general principle of Anglo-American justice that substance shall govern over form, that the protection and enforcement of rights shall not depend on words alone.

The function of the doctrine of equivalents is to preserve to meritorious inventors the full benefit of their patented invention. In the case at bar the doctrine was applied to hold accountable those who had deliberately appropriated a validly claimed invention.

The doctrine of equivalents, established a century ago as a judicial interpretation of the term "infringement" in the patent statute, is supported by an unbroken line of the decisions of this Court (see pp. 46 *et seq.*, below).

This interpretation has been accepted and acted upon by the Patent Office, charged by Congress with the administration of the Patent Law (see p. 24, above).

Although Congress has amended the patent laws in many other respects since the Court affirmed the doctrine of equivalents in 1853, Congress has not seen fit to amend the statute to require that infringement be "literal" in every case. With respect to other sections of the patent law, this Court stated in *Electric Storage Battery Co.* v. *Shimadzu*, 307 U. S. 5, 14 (1939):

> "Congress has not seen fit to amend the statute in this respect and we must assume that it has been satisfied with, and adopted, the construction given to its enactment by the courts."

This Court has also expressed itself many times as unwilling to upset a well settled administrative interpretation of the law. See, *e.g.*, *United States* v. *Shreveport Grain & Elevator Co.*, 287 U. S. 77, 84 (1932); *United States* v. *G. Falk & Brother*, 204 U. S. 143, 152 (1907).

There have been wide public discussions and many public hearings on the patent statutes and their administration, including the proceedings of the T. N. E. C., but we are aware of no legislative proposals which would repudiate the doctrine of equivalents.

The Origin of the Doctrine Demonstrates Its Purpose.

The case in which the doctrine of equivalents was first enunciated by this Court, *Winans* v. *Denmead*, 15 How. 330 (U. S. 1853), illustrates its use to protect the patentee against those who appropriate the substance of the patented invention, but seek to avoid liability by a colorable varia-

tion. In that case the petitioner's claim read, in pertinent part:

> "'What I claim as my invention . . . is, making the body of a car for the transportation of coal, etc., in the form of a frustrum of a cone, substantially as herein described, whereby the force exerted by the weight of the load presses equally in all directions, . . .'" (p. 331).

The defendant, having learned from the patent the manner in which the advantages of equal distribution of weight in a freight car could be achieved, appropriated this knowledge but avoided literal conformity with the claims of the patent by using octagonal and pyramidal cars.

The Trial Court did not submit to the jury the question of whether or not such octagonal and pyramidal cars were the equivalent of the claimed invention. Instead, it adopted the rule of law petitioners now urge this Court to adopt—that the defendant's cars, because literal infringement was lacking, did not infringe.

This Court reversed and ruled that the question should have been submitted to the jury, as trier of the facts, stating (15 How. at pp. 343-4):

> "Where form and substance are inseparable, it is enough to look at the form only. Where they are separable; where the whole substance of the invention may be copied in a different form, it is the duty of courts and juries to look through the form for the substance of the invention—for that which entitled the inventor to his patent, and which the patent was designed to secure; where that is found, there is an infringement; and it is not a defence, that it is embodied in a form not described, and in terms claimed by the patentee.
>
> "'. . . Whether, in point of fact, the defendant's cars did copy the plaintiff's invention, in the sense

above explained, is a question for the jury, and the court below erred in not leaving that question to them upon the evidence in the case, which tended to prove the affirmative."

Without such a doctrine, no patentee could be insured of his patent rights. Even the most carefully drafted patent claims would be subject to avoidance by the unscrupulous, whose purpose would be to take the substance and avoid the literal reading of the patentee's claim.

The Decisions of This Court Show the Doctrine's Continued Vigor and Importance.

The most significant fact about the decisions of this Court since it first applied the doctrine of equivalents in *Winans* v. *Denmead, supra,*—almost one hundred years ago—is that not once during this entire period has this Court ever refused to apply the doctrine—or reversed an application of the doctrine by a lower court—on the ground that "literal" infringement was the only criterion to be considered in determining infringement.

Never in its history has this Court sanctioned the appropriation of an invention by the mere non-inventive exchange of a known substitute for a named element of a validly claimed composition.

Petitioners' complete failure to call attention to any such decision in their lengthy review of the cases must be regarded as an admission that none exists. Such admission gains force from the length to which petitioners have gone in order to draw attention away from this fact.

Petitioners themselves admit that by 1892 this Court had in at least eight instances applied the doctrine of equivalents on facts substantially similar to those in *Winans* v. *Denmead, supra,* and the case at bar (their Br., p. 51, fn. 36).

Petitioners are in error when they assert at page 52 of their brief that this Court has never applied the doctrine "since *Hoyt* v. *Horne* in 1892" to hold an infringer accountable where he has succeeded in appropriating the substance while avoiding the literal terms of the claim.

The error in their contention can be demonstrated by one of the very cases which petitioners cite on the point. That case is:

> *Sanitary Refrigerator Company* v. *Winters*, 280 U. S. 30 (1929).

Another case subsequent to 1892 not cited by petitioners, but falling in the same class, is *National Cash Register Co.* v. *Boston Cash Indicator Co.*, 156 U. S. 502 (1895), and as we have pointed out above, the existence of the doctrine formed part of the *ratio decidendi* in *Halliburton Oil Well Cementing Co.* v. *Walker*, 329 U. S. 1 (1946).

That this Court has had less frequent occasion to apply the doctrine after the decision of *Hoyt* v. *Horne*, *supra*, in 1892, is no doubt in large measure related to the statutory change in 1891, limiting review by the Court in patent cases to grant of certiorari, whereas previously it had been by an appeal of right (see Act of March 3, 1891, 26 Stat. 828).

In the *Sanitary Refrigerator Company* case, *supra*, there had been a conflict between the Courts of Appeals for the Third and Seventh Circuits. In both of those courts narrow claims of the Winters and Crampton patent in suit had been conceded to be valid, and both courts proceeded upon the basis that they were not literally infringed. The Seventh Circuit had, however, applied the doctrine of equivalents to support a finding of actual infringement,

whereas the Third Circuit had refused to make such an application, stating (28 F. 2d 583, at p. 585):

> "Both the design and function of the defendants' latch and keeper are unlike those of the plaintiffs'. They cannot be said to infringe unless they come within the narrow range of equivalency of a design patent entering a crowded art."

This Court determined that the Court of Appeals for the Third Circuit had been in error and held that the patentees were entitled to a range of equivalents sufficiently broad to comprehend the colorable variations in structure which the defendant had made in seeking to appropriate the invention, while avoiding the literal terms of the claim.

Mr. Justice Sanford, speaking for this Court, stated:

> "Despite the changes in the Dent latch from the Winters and Crampton structure we find that the two devices are substantially identical, operating upon the same principle, and accomplishing the same result in substantially the same way, and that the slight change in the form of the Dent latch is merely a colorable departure from the Winters and Crampton structure.
>
> * * *
>
> "Although the claims of the Winters and Crampton patent are limited to the structure therein disclosed, we find that they are infringed by the device of the Dent latch. Both Circuit Courts of Appeals recognized that the Winters and Crampton patent, although thus limited had some range of equivalents: and we think that, though it be a narrow one, it is sufficient.
>
> * * *
>
> "* * * A close copy which seeks to use the substance of the invention, and, although showing some change in form and position, uses substantially the same devices, performing precisely the same offices with no change in principle, constitutes an infringe-

ment. *Ives* v. *Hamilton*, 92 U. S. 426, 430" (pp. 41-42).

And in *Westinghouse* v. *Boyden Power Brake Co.*, 170 U. S. 537, 568 (1898), this Court stated:

> "We have repeatedly held that a charge of infringement is sometimes made out, though the letter of the claims be avoided."

Petitioners do not and cannot cite any decisions to the contrary. In many of the cases they cite, the question of infringement did not arise, *e. g.*, *Sontag Chain Stores Co., Ltd.* v. *National Nut Company of California*, 310 U. S. 281 (1940); *Schriber-Schroth Co.* v. *Cleveland Trust Co.*, 305 U. S. 47 (1938); *General Electric Co.* v. *Wabash Appliance Corp.*, 304 U. S. 364 (1938); *Grant* v. *Walter*, 148 U. S. 547 (1893); *White* v. *Dunbar*, 119 U. S. 47 (1886); *Mahn* v. *Harwood*, 112 U. S. 354 (1884); *Miller* v. *Brass Co.*, 104 U. S. 350 (1881); *Merrill* v. *Yeomans*, 94 U. S. 568 (1876).

In others, literal infringement was found but the Court was none the less alert to impose the substantive requirements of equivalence: *Hildreth* v. *Mastoras*, 257 U. S. 27 (1921); *Abercrombie & Fitch Co.* v. *Baldwin*, 245 U. S. 198 (1917); *United States* v. *Societe Anonyme des Anciens Etablissements Cail*, 224 U. S. 309 (1912); *Continental Paper Bag Co.* v. *Eastern Paper Bag Co.*, 210 U. S. 405 (1908); *Hobbs* v. *Beach*, 180 U. S. 383 (1901); *Morley Sewing Machine Co.* v. *Lancaster*, 129 U. S. 263 (1889); *Cochrane* v. *Deener*, 94 U. S. 780 (1876).

In the remainder, the accused composition or device was not an actual infringement, either because the composition or device as a whole was not "substantially identical" or because the substituted element was not in fact an "equivalent," *e.g.*, *Cimiotti Unhairing Co.* v. *American Fur Refining Co.*, 198 U. S. 399 (1905); *Kokomo Fence*

Machine Co. v. *Kitselman*, 189 U. S. 8 (1903); *Burr* v. *Duryee*, 1 Wall. 531 (U. S. 1863).

Moreover, petitioners themselves cite *Halliburton Oil Well Cementing Co.* v. *Walker*, 329 U. S. 1 (1946), as a decision prescribing the criteria for applying the doctrine of equivalents (their Br., p. 53, fn.). In this, they are correct, and the previously quoted statement of this Court in the *Halliburton* case (*supra*, p. 25) demonstrates that the doctrine of equivalents is applicable today to protect inventors in cases like *Winans* v. *Denmead*, *supra*, and the case at bar.

Another recent decision illustrating the continued vitality of the doctrine of equivalents is *Royal Typewriter Co.* v. *Remington Rand Inc.*, 168 F. 2d 691 (2d Cir. 1948), *cert. denied*, 335 U. S. 825 (1948), where Judge Learned Hand, speaking for a unanimous court (Judges Hand, Swan and Clark), affirmed the Trial Court's finding of infringement based upon an application of the doctrine of equivalents, stating:

> "Although the defendant's 'margin regulator' does not verbally correspond throughout with the claims in suit, we think that the plaintiff has established infringement through the mediation of this doctrine" (p. 692).

This Court denied certiorari (335 U. S. 825), although the petition for certiorari urged the contention that complete "literal infringement" should be required despite earlier decisions to the contrary.

The Doctrine Has Been Consistently Used and Applied By the Lower Federal Courts.

Among the numerous cases in which the lower federal courts have refused to permit appropriation of the invention by the mere non-inventive substitution of undesignated

ingredients are: *Musher Foundation Inc.* v. *Alba Trading Co., Inc.*, 150 F. 2d 885 (2d Cir. 1945), *cert. denied*, 326 U. S. 770 (1945); *Matthews* v. *Koolvent Metal Awning Co.*, 158 F. 2d 37 (5th Cir. 1947); *B. B. Chemical Co.* v. *Ellis*, 117 F. 2d 829 (1st Cir. 1941), *aff'd on other grounds*, 314 U. S. 495 (1942) (latex for rubber); *Haynes Stellite Co.* v. *Chesterfield Co.*, 25 F. 2d 719 (6th Cir. 1928) (tungsten carbide for pure tungsten); *Universal Gypsum & Lime Co.* v. *Haggerty*, 21 F. 2d 544 (W. D. N. Y. 1927) (dextrin for cooked starch); *Treibacher-Chemische-Werke, etc.* v. *Roessler & H. C. Co.*, 219 Fed. 210 (2d Cir. 1914) (magnesium for iron); *Chadeloid Chemical Co.* v. *Frank S. De Ronde Co.*, 146 Fed. 988 (S. D. N. Y. 1906) (acetone for alcohol); *Blount* v. *Societe Anonyme DuFiltre, etc.*, 53 Fed. 98 (6th Cir. 1892) (fine sand for baked porcelain earth); *Woodward* v. *Morrison*, 30 Fed. Cas. 556, No. 18,008 (C. C. Mass. 1872) (chloride of sodium for chloride of zinc); *Poppenhusen* v. *Falke*, 19 Fed. Cas. 1052, No. 11,280 (S. D. N. Y. 1862) (spirits of turpentine for oil). In several of these cases, it may be noted, certiorari was requested, but was denied by this Court.

The Doctrine Has Proved Necessary for Substantial Justice in Other Situations.

The doctrine of equivalents, affording as it does a means of looking through mere verbalism to substance, has proved necessary in other situations.

First applied in the situation where the infringer attempted to escape accountability by changing the form and not the substance, it has also been applied in the converse case, where the accused had not appropriated the substance of the invention, but where slavish adherence to literal terms of a claim would have resulted in a judgment of infringement, though an unjust one.

Thus, in *Westinghouse* v. *Boyden Power Brake Co.*, 170 U. S. 537 (1898), this Court stated:

> "We have repeatedly held that a charge of infringement is sometimes made out, though the letter of the claims be avoided. [citations] The converse is equally true. The patentee may bring the defendant within the letter of his claims, but if the latter has so far changed the principle of the device that the claims of the patent, literally construed, have ceased to represent his actual invention, he is as little subject to be adjudged an infringer as one who has violated the letter of a statute has to be convicted, when he has done nothing in conflict with its spirit and intent" (p. 568).

In expanding the application of the doctrine of equivalents, the courts have gone on to use it to avoid injustice in resolving questions of validity. Specifically, it has been used where to have adhered strictly to the literal terms of a claim would have swept aside prior art that disclosed the same substantive combination or composition, but with some component differing literally, although not substantially, from that claimed.

Petitioners, themselves, say at page 47 of their brief that:

> "This is the same principle applied in more recent years in cases such as *Cuno Engineering Corp.* v. *Automatic Devices Corp.* (1941), 314 U. S. 84, *General Electric Co.* v. *Jewel Incandescent Lamp Co.* (1945), 326 U. S. 242, and *Mandel Brothers, Inc.* v. *Wallace* (1948), 335 U. S. 291, holding patents, for a new use of something previously known, invalid for want of invention."

The doctrine was used to resolve an issue of anticipation in *American Fruit Growers, Inc.* v. *Brogdex Co.*, 283 U. S. 1 (1931).

In that case, plaintiff sued for infringement of a patent relating to the art of preparing fresh fruit for market. In his process claims, he had specified the use of borax. In defense, it was asserted that the claims were anticipated by an earlier patent issued to Bishop which had specified the use of boracic acid, but had failed to mention borax. Despite the considerable number of technical chemical differences, this Court stated:

> "For present purposes, the two [borax and boracic acid] must be regarded as equivalents, and the mere substitution of one for the other would not involve invention or avoid infringement" (p. 14).

And the Court went on to point out the analogy of its reasoning to that earlier employed on infringement issues, saying:

> "If the claims of the patent in suit are valid, one operating under the process described by Bishop would infringe * * *" (p. 14).

Here the Findings of Deliberate Copying Extend to the Equivalent Used by Petitioners.

The criteria for an application of the doctrine of equivalents have always been practical rather than theoretical. This doctrine, as was said in *Matthews* v. *Koolvent Metal Awning Co.*, 158 F. 2d 37, 40 (5th Cir. 1947):

> "* * * has never been a mere dry bones doctrine. Put forward to do justice and prevent defrauding by dissimulation and deceit, it should be, it has been, applied to give its equitable purpose effect. Not at all recondite or difficult of understanding or application, it is the mere expression and application of the view that like things are alike and that they are not made unlike by formal and nonsubstantial changes, no

> matter how cunningly contrived the dissimulation, how clever the changes in form."

Consequently, courts have always given weight to extrinsic circumstances showing an actual copying of the patented invention. See, *e.g.*, *Aluminum Co. of America* v. *Thompson Products, Inc.*, 122 F. 2d 796, 799 (6th Cir. 1941); *Donner* v. *Sheer Pharmacal Corp.*, 64 F. 2d 217, 223 (8th Cir. 1933), *cert. denied*, 290 U. S. 658 (1933); *Standard Paint Co.* v. *Bird*, 175 Fed. 346, 361 (S. D. N. Y. 1910), *aff'd*, 182 Fed. 1023 (2d Cir. 1910).

It is of course true, as petitioners themselves point out, that infringement does not depend upon whether the accused infringer in fact relied on the patent (Petitioners' Brief, pp. 36-37). Therefore, the cases in which the doctrine of equivalents has been applied have not invariably required proof that defendant actually copied the teachings of the patent (see cases cited at pages 46-50, above). Moreover, it is not requisite to an application of the doctrine that the equivalent which the accused infringer uses be referred to in the patent (see 3 Walker On Patents (Deller's ed. 1937) §464 at page 1700). But this merely demonstrates that the doctrine has been applied in fact situations less clear-cut than that here presented.

The facts in the present case are particularly close to those in *Woodward* v. *Morrison*, 30 Fed. Cas. 556, 559, No. 18,008 (C. C. Mass. 1872), where the court stated of the infringer:

> "Starting from the platform of the complainant's patent, with the advantage of his discoveries, it is plain that the defendant could, by inquiring of any chemist, have learned that the one could be used in this process in place of the other, with like results. This information he appears to have obtained of Dr. Jackson. From him or some other chemist,

> he obtained the information that the other salts of zinc and the other salts of copper would for this purpose be the chemical equivalents of each other, and of the chloride of zinc. His knowledge in either case was not the result of discovery or experiment. He appears to have started with an appropriation of the complainant's invention, and to have proceeded in precisely the same way as a person who, after having examined a patent for a machine containing several well-known mechanical contrivances in combination, should go to a mechanical expert to substitute some one or more mechanical equivalents for the contrivances in the patented machine, hoping thereby to take his machine out of the monopoly of the patent."

In the present case the petitioners did not even need a "Dr. Jackson." They were able to find the equivalent right in the patent. To petitioner Lincoln, there may be applied the comment of this Court in *New York Scaffolding Co.* v. *Chain Belt Co.*, 254 U. S. 32, 37 (1920):

> "His purpose was evasion. To evasion he was prompted. Beyond what was necessary to that, he exerted no vision or conception."

The Trial Court found that petitioners actually lifted their "equivalent" from the patent, besides copying it deliberately in all other respects. (See Findings quoted pp. 19-20, above).

The findings in the present case, therefore, relieve this Court of the necessity of determining any ultimate limits in the way of fact situations in which the doctrine of equivalents may properly be applied. We have here the most elementary sort of situation requiring its application.

The Statute (R. S. 4888) and the Doctrine of Equivalents are Not in "Manifest and Irreconcilable Conflict."

Petitioners bear down very heavily upon R. S. 4888, which tells how a patent should be drafted. This Court and both lower courts have all held that claims 18, 20, 22 and 23 are valid, and this necessarily means that they were drafted in conformity with the statute. That point is not open on this reargument.

Petitioners insist, however, that this Court's recent decisions requiring that inventions be claimed with particularity should be interpreted as an implied repudiation of the principle that the Court is to determine infringement as a matter of substance rather than simply of words. They infer from the requirement that the inventor realistically describe his invention, an invitation to evade so strictly limited a claim of right.

But this Court in *Halliburton Oil Well Cementing Co.* v. *Walker*, 329 U. S. 1 (1946), characterized its opinion as being entirely in harmony with *Continental Paper Bag Co.* v. *Eastern Paper Bag Co.*, 210 U. S. 405 (1908), ["the leading case on the doctrine of equivalents"; Petitioners' Br., p. 53]. And the *Halliburton* case is regarded as a landmark among the recent decisions of this Court requiring that inventions be "distinctly claimed" under R. S. 4888.

In the *Halliburton* case, this Court indicated that the doctrine of equivalents is a necessary corollary of the requirement that inventions be claimed with a high degree of particularity.

This also is pointed out in Woodward, *Definiteness and Particularity in Patent Claims* (1948) 46 Mich. L. Rev. 755, 782 (cited and relied upon by petitioners—Br., p. 50). Thus the author states:

> "Mr. Justice Black seems to express a preference for leaving the question of the boundaries of

> the broader aspects of this type of invention to the determination of the courts through the application of the 'doctrine of equivalents' beyond the precise terms of narrow claims limited to the forms of the invention specifically disclosed. * * *."

The author disagrees with this preference, but only because he would have the Court uphold "means" clauses of the type which this Court struck down in the *Halliburton* case (46 Mich. L. Rev. at p. 779).

The same article points out (p. 785) that the Court of Appeals for the Seventh Circuit, following this Court's decision in the *Halliburton* case, applied the technique therein suggested. Thus, in *Minnesota Mining & Manufacturing Co.* v. *International Plastic Corp.*, 159 F. 2d 554 (7th Cir. 1947), that court enforced claims strictly descriptive of the particular form of the invention "to cover 'equivalent' forms not strictly within the terms of such claims."

The Amendment of R. S. 4888 in 1870 Was a Restatement of Existing Law.

Petitioners, at pages 50-51 of their brief, seek to create a synthetic statutory basis for their argument of "inconsistency" by emphasizing the enactment of the Patent Act of 1870. They refer to this as a "significant change in the language of the statute."

Contrary to petitioners' statement, the amendment of R. S. 4888 in 1870 was not the result of dissatisfaction with the pre-existing statute.

The passage which petitioners quote from the Commissioner's Report to Congress in 1869 (Petitioners' Opening Br., p. 50) has been distorted out of its context. In the quoted portion of his Report, the Commissioner was ex-

plaining to Congress that scarcely any issued patents were held invalid in court on the ground of anticipation, because the Patent Office examiners covered the prior art so comprehensively in their examinations prior to issuance; and most litigation was on the issue of infringement. This plainly appears when the quotation is placed in its context:

> "I do not hesitate to say that such an examination, made by skilled, sworn, and impartial experts, is more thorough and satisfactory than it would be if made at much greater cost by solicitors, who made it in the interest of their clients.
>
> "Accordingly, the history of patent litigation will prove that but few patents have been held to be void by reason of the existence of prior inventions, the knowledge of which was within the reach of the Patent Office. The great source of litigation is the conflict upon the issue of infringement, or the effort on the part of the inventor to carry the patent beyond the limits assigned to it by the Office at the time of its issue" (H. R. Exec. Doc. No. 102, 41st Cong., 2d Sess., p. 8).

The foregoing discussion by the Commissioner formed the basis for his request that Congress appropriate additional funds for Patent Office examiners.

Moreover, the change in the wording of what later became R. S. 4888, in 1870, was not presented to Congress as a change in existing law. The Committee Reports, apparently, are no longer available. But, in discussing the bill in the House when it was reported back from the Committee on Patents, on April 14, 1870, Chairman Jenckes stated:

> "That revisal of these particular statutes was reported to this House early in this Congress and referred by the House to the Committee on the Revision of the Laws of the United States. It was examined

by that committee and was found to embody all the provisions of existing law, in brief, clear, and precise language" (Cong. Globe, 41st Cong., 2d Sess. 1870, p. 2680).

After reviewing a number of other amendments in the law made by the 1870 act, Mr. Jenckes went on to state as to the remainder, including the section now under discussion:

> "In other respects the law stands without any other change than that it is enlarged, defined, made clear in its terms and provisions and in its proposed execution, so that the remedies can be pursued without mistake and with effect" (Cong. Globe, 41st Cong., 2d Sess. 1870, p. 2683).

POINT IV.

In Answer to Points I and III of Petitioners' Brief, Which Have Little or no Bearing on the Applicability of the Doctrine of Equivalents.

Points I and III of petitioners' brief are so obviously cast in form to evade the very issue upon which this Court requested argument—the application of the doctrine of equivalents to the findings of fact—that we have deferred direct answer until this late place in our brief. Because Point III of petitioners' brief is in large measure a repetition of arguments raised in Point I, we have combined the answer to both these arguments in this single point.

Petitioners' "Statement of Facts."

The "Statement of Facts" in petitioners' brief, pages 3-24, relates almost entirely to matters not germane to this reargument, but instead to the issues which are now foreclosed by the decisions of all three courts. Notable through-

out this portion of their brief is an attempt to belittle the invention here involved, to obscure its true stature.

Above, at page 34, we have already mentioned the "truly remarkable difference" between the Jones *et al.* invention and what had gone before. If the Court wishes to refer to the advance made by these inventors over the prior art, we respectfully suggest that the Court read Point II, pages 51-56, of our brief dated December 24, 1948.

Findings of Fact or "Plain Error of Law?"

Petitioners' attempt to avoid any consideration of the doctrine of equivalents at all by insisting (p. 28) that "this Court's affirmance of the judgment of infringement rests, not upon a doctrine of equivalents, but upon plain error of law."

Petitioners, not able to obtain a favorable ruling on the question of infringement from any court, now find it necessary to take sharp issue with both lower courts and with this Court. They do not dare face the facts or take account of them. Instead, they charge this Court with "plain error of law" and even with "threefold error of law" (p. 28). According to their brief:

> "The Court arrived at this result by failing to note that the trial court's judgment of infringement rests not upon a finding of fact but turns solely and entirely upon a point of law" (p. 29)

and the result of this Court's decision will be to

> "mutilate the law" (p. 30).

According to petitioners, the bungling of this Court is but the culmination of a series of blunders which have marked the progress of this case through our federal courts. The Trial Court is repeatedly charged with "misreading

the specification" (pp. 62-64). And, of course, the Court of Appeals reached its decision only by "misreading what the Trial Court said" (p. 68).

We have set forth above some of the extended findings of detailed facts which led to the Trial Court's judgment of infringement (pp. 17-21). Petitioners, themselves, treated the question of infringement as a question of fact in the lower courts. Many of the findings proposed by petitioners and rejected by the Trial Court bore directly on the question of infringement, including the equivalence of manganese and the alkaline earth metals—see for example R. 939.

Trial Court Did Not "Expand Claims" by Resort to Specifications.

Petitioners assert that "because manganese silicate is named in the specification, the trial court" read the claims in issue to embrace manganese silicate (p. 28). Again, they say (p. 30), "it expands the claims by resort to the specification."

Petitioners would have it that all the Trial Court did was to construe the claims and to give them an expanded construction through reference to the specification, and thus sidestep the whole matter of equivalents.

Nothing could be further from the truth. The Trial Court's own opinion makes it perfectly plain. So far as a construction of the claims is concerned, he says flatly (R. 919-920):

> "Since the accused flux is composed principally of manganese silicate, it does not literally infringe composition claims 18, 20, 22 and 23."

There ends his construction of the claims. From there on he had to, and did, determine as an issue of fact whether or not manganese was an "equivalent."

The Trial Court's reference to the "specification" was simply by way of confirmation of one question involved in resolution of that fact issue.

Under the doctrine of equivalents, as stated above (pp. 24-26), these fact questions remained,—first, whether or not manganese was the equivalent of the alkaline earth metals for the purpose of compositions contemplated by the Jones *et al.* patent, and second, whether such equivalence was taught by the art available at the date of the patent.

The evidence as to this first issue of equivalence has been reviewed above (pp. 14-17).

Upon the second issue—"knowledge" of such equivalence in the existing art—the Trial Court also had available text books on inorganic chemistry, expert testimony and other evidence, as reviewed above (pp. 15-17). But the Trial Court had, in addition, conclusive evidence of such knowledge, the specifications of the patent in suit.

For the limited purpose only of determining whether the state of the existing art made further investigation necessary to arrive at the substitution of manganese for the alkaline earth metals, the Trial Court pointed to the fact that the specifications of the patent itself disclosed such equivalence (R. 920). It also noted the confirmatory fact that the petitioners had introduced no evidence that they had looked elsewhere for their information (Finding No. 22, R. 926).

Thus, contrary to petitioners' contentions, the determination of infringement was not based upon any construction of the claims of the patent in the light of the specifications. Instead, it was based upon a determination that all the facts necessary for an application of the doctrine of equivalents had been established.

Such a determination was in no way inconsistent with the Trial Court's and this Court's determination that claims 24 and 26 were unambiguously broader than the invention, and that they were not entitled by canons of contract construction to read in limitations from the specifications.

That manganese was a known equivalent in silicates for the alkaline earth metals has been demonstrated in chemical treatises and testimony in this record independent of the patent (*ante* pp. 15-17). Had the patentees left it at that, petitioners would have been robbed of this whole argument of "construction by reference to the specification."

But because, and only because, the patentees went further is the argument raised. Stripped of its sound and fury, what petitioners seem to be trying to argue is the proposition that:

> A patentee should be penalized for pointing out equivalents in the specification of his patent instead of remitting the public to search through other literature of the field.

The result of any such proposition would be intolerable. It would be fatal to the primary public interest. Nothing could be better calculated to minimize the very benefit, the *quid pro quo*, for which a patent is granted, namely, the full description of how the invention may be practiced once the limited term of the patent has expired (*cf. Scott Paper Co.* v. *Marcalus Co.*, 326 U. S. 249, 255 (1945)).

The Trial Court Did Not "Misread" the Specifications.

In addition to misrepresenting the Trial Court's use of the specifications, petitioners accuse the Trial Court of misreading them (pp. 62-64).

Petitioners first assert that the specifications merely disclose the utility of manganese in combination with calcium

as a substitute for the preferred composition of the patent in suit. This proves nothing on the issue of infringement, for as the Trial Court's Finding No. 21 (R. 926) shows, the accused Lincolnweld 660 flux exemplifies the use of manganese with calcium.

Furthermore, the Trial Court has its own answer to petitioners' contention. Judge Swygert stated (R. 920):

> "The defendants have urged a construction that would have the sentence in question read, 'We have used calcium silicate *with* or *plus* silicates of sodium, etc.' It is my view that the correct construction of the sentence is, 'We have used calcium silicate and *also* silicates of sodium, etc.' That this is the correct view is borne out by the first application. That document in part recites: '* * * and there are other materials suitable to form the main body of the flux. Magnesium silicate, manganese silicate or these in combination serve admirably. * * * Particular fluxes that we have used are as follows: * * * (2) manganese silicate $MNO.SiO_2$ * * * .' Accordingly, it is concluded that the patent itself fully discloses that welding compositions composed chiefly of manganese silicate and prepared according to the teachings of the patent are equivalent to those in which the alkaline earth metals are the principal constituents." (Italics Judge Swygert's.)

Petitioners then contend (pp. 63-4) that the specifications do not disclose that the compositions designated as having been used by the inventors are operative because of the inventors' statement:

> "A number of these conductive welding compositions are more or less efficacious in our process."

In quoting this clause, petitioners have omitted the term "conductive welding compositions," and with reason, be-

cause the term, itself, implies that all the compositions had the operational qualities which the inventors wished. As to all of these compositions, Kennedy testified:

> "* * * this factor is common to all of them, that a conductive melt is formed; that when an electrode is in contact with this conductive melt, metal will be deposited which is sound and good" (R. 128).

Again the Trial Court's opinion, after study of all the expert testimony, provides an answer to petitioners' contention:

> "Despite defendants' arguments concerning the proper meaning of the clause 'While a number of these conductive welding compositions are more or less efficacious in our process,' a fair construction of it is that the invention includes compositions of those silicates mentioned and that the inventors found a number of them will accomplish the objectives of the patent more effectively than others of the group" (R. 917).

Petitioners conclude the argument of their brief with the contention that the specifications of the patent only contemplated the use of the substitution of the manganese in moderate amounts. We have already pointed out that the Trial Court, on the basis of expert testimony, found directly to the contrary (pp. 30-31).

This Court Did Not "Misread" the Trial Court's Findings.

Petitioners also advance, as "legal error" in this Court's judgment, the contention that this Court was mistaken in its interpretation of the findings of the Trial Court (pp. 32-33). Petitioners bluntly take issue with this Court's statement that

> "'the District Court found that the Lincoln Electric Co. made, and the other petitioners used and sold,

> a flux substantially identical with that set forth in the valid composition claims [of the patent in suit]' (336 U. S. 271, 275)."

Petitioners have broken the quotation in the middle of a sentence. Mr. Justice Jackson goes on to state:

> "and which could be made by a person skilled in the art merely by following its teachings. The petitioners introduced no evidence to show that their accused flux was derived either from the prior art, by independent experiment or from any source other than the teachings of the patent in suit."

Nowhere do petitioners honestly face up to the fact that actual identity did exist in each and every respect, except one—that actual identity was lacking only as to a single ingredient. On the contrary, petitioners, with complete lack of candor, talk as if the patented welding composition were a single element and as if their flux had nothing in common with the patented composition except the similarity of operation and result.

Substantial identity did exist. The Trial Court expressly so found (Finding No. 21, R. 926). When that fact is coupled with the evidence that the knowledge of such identity was available to the petitioners, which is indicated in the above portion of the Court's opinion petitioners neglected to quote, all of the factual bases necessary for the determination of infringement were supplied.

This is No Patent Upon a "Result."

Petitioners have tried (pp. 32-33) to vault from the fact that one requisite of an equivalent is identity of result, to the wholly untenable conclusion that application of the doctrine results in a claim to a "result" or "function."

Precisely the contrary is true, as this Court has most carefully pointed out in *Halliburton Oil Well Cementing Co.* v. *Walker*, 329 U. S. 1 (1946). See discussion *ante*, pp. 24-26.

A claim to the result here would be: any flux which is capable of producing the sheath of molten flux required in sealed-arc welding.

In contrast, the claims here in issue are drawn to no such function or result. Instead, they specify a particular chemical composition, and as this Court has held, they have specified that composition, with whatever rigor of particularity R.S. 4888 demands.

The doctrine of equivalents serves simply to prevent the substitution in that carefully defined pattern of composition of one ingredient for another and in a manner that would have been obvious to anyone skilled in the art at the date of the invention. As remarked in one of the articles cited by petitioners (Hamilton and Till (1948) 13 Law and Contemporary Problems 245):

> "In the fields of chemicals and metallurgy particularly there is abundant opportunity for variations without essential difference." (p. 256)

That is all petitioners have done.

Petitioners' Back-Door Attack on Validity is Unfounded.

After but six pages of their "Argument" under Point I, petitioners go back to worrying the bone of validity, despite the fact that it is at least one issue which is closed in this case. This they do under the guise of explaining the horrors attendant upon finding them infringers (p. 33). But the mask is soon dropped. See, for example, their footnote 28 at page 34.

Here petitioners again reiterate their thrice-rejected contention that a finding of infringement will cause the patent to embrace prior art fluxes (pp. 33-37, 64-67), and cause the patent to include inoperative compounds (pp. 67-71).

Petitioners seek to give the impression that Lincoln derived his flux from the Miller patent, although they do not have the temerity to make such a statement.

Apart from their irrelevance, petitioners' contentions directly contradict the findings of fact of the Trial Court and the evidence.

All of the prior art fluxes and prior art patents relating to fluxes, including Robinoff and Miller and the rest, were before the Trial Court when the Trial Court determined that the Jones *et al.* invention was patentable over all prior art electric welding (R. 908).

Lincoln's own chief engineer, Landis, admitted that not one of the old fluxes could be used in place of Lincolnweld 660 flux (R. 770). Petitioners' welding expert, Yeomans, had not conducted any tests with prior art fluxes and was not surprised to learn that none of them could be used (R. 749).

The plaintiff's expert had made over 170 tests of the prior art fluxes and had found that it was not possible to substitute any of those fluxes and secure the operational characteristics of the fluxes disclosed in the Jones *et al.* patent (R. 853-4, Pltf's Ex. 236, off. R. 854, distributed as supplement to Record). Defendant did not even cross-examine on these experiments.

Robinoff Clay Flux.

Petitioners mention the Robinoff clay flux at page 66 and elsewhere in their brief. If the Court should desire to refer to this matter, we respectfully request the Court to turn

to our earlier Brief for Respondent and read pages 10-12 and Appendix, pages ix to xiii.

Contrary to petitioners' contention (p. 66), the Robinoff flux was not an aluminum silicate within the meaning of the Jones *et al.* patent. It was merely a mechanical mixture of natural clay, lime and ferromanganese (R. 514-15).

It is hard to imagine how any question can now remain open as to the difference between this flux and the compositions of the patent in suit. This flux formed the starting point of the investigations of Jones *et al.*, as was stated specifically in their patent (R. 955). It violated the mandatory direction of the patent that the compositions are to be prepared so as to complete all gas-forming reactions before use (p. 2, col. 1, line 42 *et seq.*, R. 956). It violated a second mandatory direction that the "composition should be substantially anhydrous" (p. 2, col. 1, lines 7-8, R. 957; see Respondent's former Main Brief, Appendix, p. xiii).

Miller.

Petitioners in this phase of their argument reiterate their contention that if Lincolnweld 660 is held to infringe the valid claims of the Jones *et al.* patent, then those claims must be regarded as anticipated by Miller 1,754,566 (pp. 33-37, 64-66). We covered this matter in our earlier Brief for Respondent at pages xiv-xv of the Appendix.

They attempt to convert the Trial Court's factual finding that Miller did not so anticipate into an issue of law by the assertion (pp. 34-35) that the Trial Court erroneously gave effect only to the preferred composition of Miller.

Miller Patent No. 1,754,566 is addressed to a coating for a welding rod. Such a flux would necessarily contain a binder material (p. 1, col. 2, lines 53-60, R. 969) which would create the very gases which it was the purpose of the Jones *et al.* patent to prevent (R. 167).

Moreover, experimental data submitted to the Trial Court showed conclusively that the Miller flux was wholly unusable in sealed-arc welding (Pltf's Ex. 236, off. R. 854, distributed as supplement to record).

The petitioners, however, attempt to make capital of the almost incidental reference to "preformed" manganese silicate which occurs in the quotation from the Miller patent used by the Trial Court in distinguishing it from the Jones *et al.* patent.

But the Miller patent contains none of the directions of the Jones *et al.* patent with respect to proportions, preparation, and physical and chemical condition of the Jones *et al.* welding compositions. Miller recommends by way of example the use of raw manganese ore, which because it is MnO_2, would give off gas on being heated (R. 277). The Trial Court was, in fact, able to quote as a significant example of how far the Miller patent was from disclosure of the Jones *et al.* patent the very section of the patent upon which petitioners most relied. This indicated that Miller actually preferred an unreacted mixture of ingredients which violated one of the most important directions of the Jones *et al.* patent. The Trial Court stated:

> "The defendants contend that if it be determined that the Lincolnweld composition containing a major proportion of manganese silicate infringes any of the composition claims in issue, such claims have been completely anticipated by Miller Patents Nos. 1,741,031, 1,748,785 and 1,754,566, particularly the latter, which teaches the use of a manganese silicate coating in electric welding. But that Miller patent did not teach all that the Jones, et al. patent does concerning an improved composition suitable for the welding method discovered by Robinoff. For example, that Miller patent reads in part:
>
> " 'Instead of preformed manganese silicate the coating may contain material adapted to react at

the temperature of the metal-depositing operation to produce manganese silicate. This is the preferred form of the invention as it permits one operation to be dispensed with. The coating may contain for example an oxide ore of manganese and any finely divided form of silica. As in the case of the preformed silicate, the proportions may be such that $MnO.SiO_2$ or a more basic or acidic silicate will be formed.'

The patent in suit requires that the acidic and the basic constituents of the composition be prefused or reacted, for it states as follows:

"'The chemical condition of the welding composition or medium is important: the acidic and basic constituents should be reacted, the composition should be substantially anhydrous and free from gases and all reactions [which would] evolve deleterious amounts of gases during welding should be substantially completed, before the medium is used in the welding process.'

Therefore, it cannot be said that the composition claims herein held valid are anticipated by the teachings of Miller" (R. 920-921).

Operability of Fluxes.

Petitioners claim that if their flux was construed to be an infringement the patent would include inoperable compositions (pp. 67-71).

This contention is utter nonsense.

The sole question now before this Court is whether the accused Lincolnweld 660 flux, which is in all respects but one identical with the preferred composition of the patent in suit and which functions in an identical manner, is an equivalent of the fluxes validly claimed by respondents.

No issue is raised as to any other flux composition, whether of operability or infringement.

None the less, petitioners' claim as to the inoperability of other compositions is incorrect as a matter of fact. The Trial Court found (Finding No. 13, R. 925):

> "Manganese silicate is one of the nine metallic silicates which the specification discloses that the inventors have used as principal constituents in welding compositions attaining more or less effectively the objectives of their invention."

This finding was not only based upon the specific language of the patent, but was based on the uncontradicted testimony of Kennedy, who stated as to these compositions:

> "* * * this factor is common to all of them, that a conductive melt is formed; that when an electrode is in contact with this conductive melt, metal will be deposited which is sound and good" (R. 128).

As in the earlier hearing before this Court, petitioners turn (pp. 69-70) to the inventors' notes to provide some basis for a claim that two of the compositions designated in the patent—iron silicate and sodium—were inoperative.

Petitioners' claim is a simple misreading of the inventor's notes. If the Court desires to refer to this point, we respectfully suggest that the Court turn to pages xx-xxi of the Appendix to our earlier "Brief for Respondent."

Petitioners' assertion that others of the nine compositions mentioned in the patent were not shown to be useful is in direct contradiction to the testimony of Kennedy and the finding of the Trial Court quoted above.

There is No Least Showing Here of "Dedication."

Petitioners' brief, at pages 37-42, argues that the patentees here "dedicated" manganese to the public. Here petitioners have attempted to present in another guise what is actually a frontal attack upon the doctrine of equivalents as such.

Petitioners' contention, that the exclusion of manganese from claims of the Jones *et al.* patent was purposeful and therefore should preclude the patentees from asserting that manganese was included in their claims, is simply another way of stating that the doctrine of equivalents should not exist.

The patentees expected, and these infringers were on notice, that the claims were intended to cover not only the compositions literally within their scope but their equivalents as well. We have already discussed above (pp. 38-41) the problem facing the draftsman of the Jones *et al.* claims.

With one exception, the jumble of cases which petitioners cite to sustain their proposition of abandonment or dedication of manganese (their Br., p. 39) do not even touch the problem of equivalents. In three of those cases, involving the peculiarities of reissue patents, the decision was not rested upon dedication or abandonment: *Mahn* v. *Harwood*, 112 U. S. 354 (1884); *Miller* v. *Brass Co.*, 104 U. S. 350 (1881); and *Sontag Chain Stores Co., Ltd.* v. *National Nut Company of California*, 310 U. S. 281 (1940). In both the *Miller* and *Mahn* cases, the reissue patents were held invalid because of the tardiness of the applications for them. In the *Sontag* case, the petitioner was declared to be insulated by "intervening rights."

In another of petitioners' cases [*Altoona Publix Theaters, Inc.* v. *American Tri-Ergon Corp.*, 294 U. S. 477

(1935)], the combination urged by the patentees had nowhere been claimed in any single claim of the patent. In still another [*McClain* v. *Ortmayer*, 141 U. S. 419 (1891)] the defendant had completely omitted one of the elements of the claimed combination (*i.e.*, he had omitted the rear one of two horse collar buckles specified in the claim).

The remaining case, *Deering* v. *Winona Harvester Works*, 155 U. S. 286 (1894), is the only one of petitioners' cases which actually reached the question of equivalents, and in that case this Court found that the patentees' contribution had been so picayune as to preclude the application of the doctrine. This Court, however, said (p. 295):

> "If Olin had been the first to devise a contrivance of this description for adjusting the flow of grain upon the main elevator, it is possible that, under the cases of *Ives* v. *Hamilton*, 92 U. S. 426, and *Hoyt* v. *Horne*, 145 U. S. 302, a construction broad enough to include defendants' device might have been sustained."

Further, so-called dedication or abandonment of an invention is an affirmative defense which must be pleaded and proved: *Electric Storage Battery Co.* v. *Shimadzu*, 307 U. S. 5, 16 (1939), and cases there cited. Notable here is the fact that petitioners pleaded in their answers (R. 6, 10) that the Jones *et al.* inventions had been "abandoned" by certain companies and persons listed in the answer, but the list did not include the patentees of the patent in suit. Nor did their evidence or cross-examination of the patentees touch on this point. Indeed, the theory of abandonment or dedication by the patentee is now advanced by the petitioners for the first time in any court.

The petitioners' assertion (p. 38) that reference to manganese silicate, although admittedly contained in the first application, was not carried over into the final patent, is simply untrue. They are contradicted not only by the patent and by the Trial Court's findings, but also out of their own mouths, at page 28 of their brief, where they admit that "manganese silicate is named in the specification."

In substance, the petitioners are simply arguing again that the patentees should be penalized for having expressly designated the "equivalent" manganese in the specification.

Petitioners, for the first time in any court, concede that the patentees knew that manganese silicate was operable:

> "They found out in their experiments that it would produce a good weld" (Petitioners' Brief, p. 38).

This concession goes far to negative the petitioners' arguments in their Points I and III.

No Foundation for Assertion of "Prohibited Reissue."

The last argument under this point in petitioners' brief, pages 43-44, is that the judgment of the Trial Court had the effect of granting the patentees a "prohibited reissue." This is but another variation upon the same theme.

Once it is assumed, as the patentees had every reason to assume, that the claims of the patent were to be construed with reference to the existence of the doctrine of equivalents, the effect of the judgment of this Court and the lower courts was just to give the claims precisely the scope contemplated in the original issue of the patent.

The situation is analogous to that presented in *Abercrombie & Fitch Co. v. Baldwin*, 245 U. S. 198 (1917), cited

by petitioners in reference to application of the doctrine of equivalents (their brief, p. 58, fn. 38). In that case the patent in suit had been reissued and was attacked as entailing a broadening of the claim. Such attack was rejected by this Court, thus (p. 207):

> "Indeed, we are of opinion that the original patent did not need the exposition of the reissue. It exhibited an invention of merit, certainly one entitled to invoke the doctrine of equivalents."

"Chart Showing Expansion of Patent by Reading Specification into Claims" (p. 79 of Petitioners' Brief.)

The concluding feature of petitioners' brief is the chart folded in as the last page.

This chart is not in the record. It is a composite made up by the author presenting, as if they were facts, the mélange of points and contentions included in their brief. It shows how far afield petitioners have had to go in their search for arguments.

Many years have intervened since Jones and his two colleagues made their compounds in 1932—yet what is used in industry right down to date is precisely what the inventors compounded and described in their patent. Unionmelt 20 is the preferred composition of the patent (R. 956, bottom of col. 2) and that in turn is flux No. 68 described in the inventors' shop notes (R. 1162). Lincolnweld 660, in which manganese is substituted, is the same as flux No. 70 on the very same page of the inventors' shop notes (R. 1162).

Conclusion.

The decision of this Court, handed down on February 28, 1949, affirmed an application of the doctrine of equivalents by both lower courts. In the light of the concurrent findings of fact made by those courts, this determination was correct and should not be disturbed.

Respectfully submitted,

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